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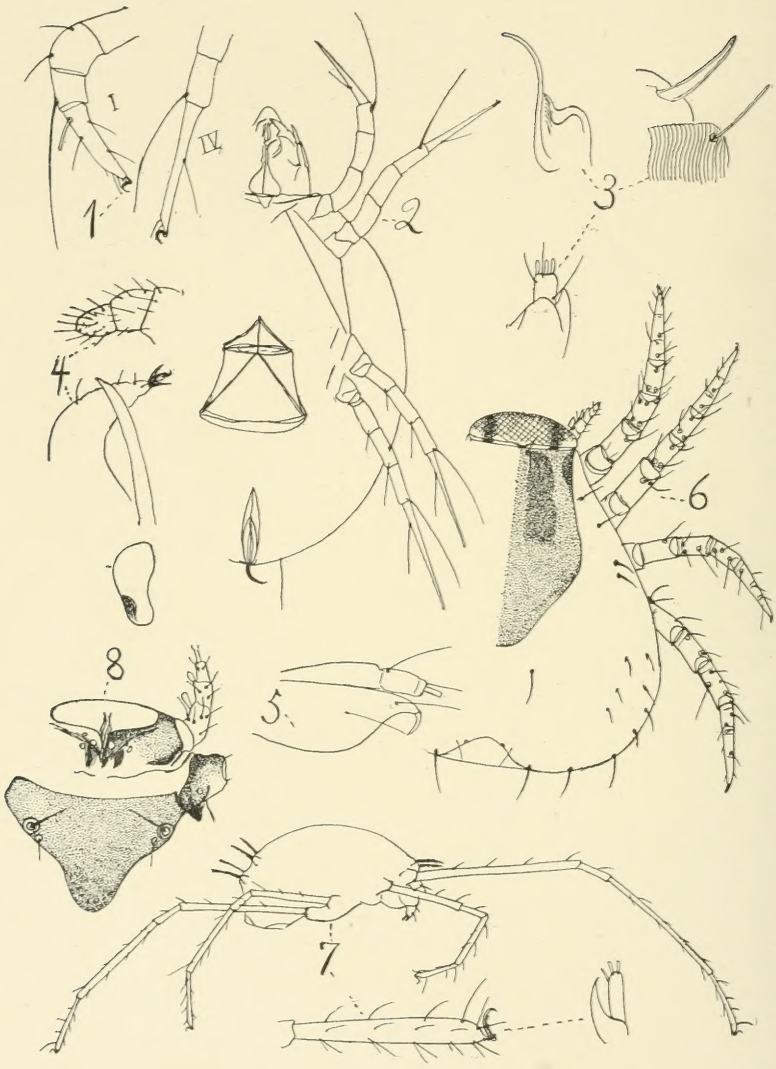

NEW MITES—BANKS.

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2. CHORTOGLYPHUS GRACILIPES.
3. TETRANOBIA DECEPTA.
4. NOTOPHALLUS VIRIDIS.
5. TETRANYCHUS ANTILLARUM.
6, 8. SPELAEORHYNCHUS LATUS.
7. TETRANYCHINA APICALIS.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXVIII. MAY, 1917. No. 5.

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New Mites, mostly Economic (Arach., Acar.).

By NATHAN BANKS.

(Plates XIV, XV).

The following new species are part of the great amount of material sent to the United States Bureau of Entomology for determination. The species of definite economic value I have described, and also a few that represent peculiar genera, new to the collections. A new arrangement of the genera of red spiders is also proposed, including three new genera.

EUPODIDAE.

Notophallus viridis n. sp. (Pl. XIV, fig. 4; Pl. XV, fig. 14).

Dark greenish, legs reddish, a red spot on dorsum near tip, and one on venter also near tip; mouth parts red. Body about one and one-third times longer than broad, almost globose, high and broadly rounded behind, above with scattered, fine, short, simple hairs. Legs slender; legs I and IV as long as, or a little longer than body; tarsi I about as long as the preceding joint, tarsus IV plainly a little shorter than

the preceding joint, legs with long slender bristles, more numerous, but shorter, below than above. Mandibles with a slender blade and the opposite portion tipped with a process of several curved teeth; palpi short and stout, last joint scarcely longer than the preceding one.

Length, .8 mm.

From Tempe, Arizona, December 14, 1911 (A. N. Wilson), and Wagoner, Oklahoma, December 3, 1914, on wheat.

TETRANYCHIDAE.

Tetranychus antillarum n. sp. (Pl. XIV, fig. 5; Pl. XV, fig. 13).

Body yellowish, fully twice as long as broad, tapering at each end, with long stout bristles above; two each side in front, the anterior much shorter than the other, abdomen with five in a submedian row each side, and a sublateral row of four bristles, each as long as femur I. Legs shorter or barely as long as body, legs I and IV subequal, leg II about two-thirds as long as leg I, all with long bristles, one on the femur longer than the joint; claw of tarsus strongly bent. Mandibles (inside view) very broad just before tip, then suddenly concavely narrowed to the hook, which is small. Palpi very small and inconspicuous.

Length, .35 mm.

On leaves of *Leonotis nepetaefolia*, August 6, 1912, Rio Piedras, Porto Rico (T. R. Jones), also on *Asclepias curassavica*.

TETRANOBIA n. gen.

The stigmata are in a distinct horn each side at base of the mouth parts. Legs moderately long, first pair as long as the body; the tarsi are plainly shorter than the preceding joint, and end in a single claw. The body is furnished with fine, simple hairs like *Tetranychus*, and there is no four cleft plate on the front margin. The palpi are stout and the thumb tipped with fingers as in *Tetranychus*.

Type *Tetranychus longipes* Bks., and includes also the following new species.

Tetronobia decepta n. sp. (Pl. XIV, fig. 3; Pl. XV, fig. 15).

Body about one and one-half as long as broad, broadest behind the middle, and at this point very high; clothed sparingly above with a few, very short, simple bristles, mostly behind, but one pair on front margin over the mandibles. Legs very slender; leg I as long as body, II not half as long as leg I, III but little longer than II,

IV about as long as width of body; all tarsi shorter than the preceding joint, but more plainly so in leg I; all with long, scattered bristles, most of them more than twice as long as the width of a joint. Palpi very short and stout; thumb cylindrical, ending in three equal fingers.

Length, .65 mm.

From Mesa, Arizona, on barley, March 27, 1913, collected by R. N. Wilson.

TETRANYCHINA n. gen.

There are no prostigmatal horns; the legs are very long and slender, legs I and IV longer than body, and the tarsi much shorter than the preceding joint, each ending in a toothed claw, tarsi I a little enlarged near tip; palpi stout ending in thumb and fingers. Body with stout, usually serrate bristles.

Type.—*T. apicalis* n. sp.

Includes also, I presume, the *Neophyllobius harti* Ewing.

Tetranychina apicalis n. sp. (Pl. XIV, fig. 7).

Body less than twice as long as broad, strongly convex above, a pair of bristles on the front, and two pairs of erect bristles near the tip of abdomen, the hindmost pair almost clavate, both pairs arising from tubercles and are minutely serrate. Legs long and slender with a few very short, fine hairs; leg I much longer than the body; femur I nearly as long as the body; leg II hardly more than one-half as long as leg I, leg III longer than body, and leg IV much longer, but shorter than leg I, all tarsi shorter than preceding joint, and tarsi I plainly a little larger near tip than elsewhere. Palpi rather stout, with a slender thumb, ending in two equal fingers, and a stout bristle or finger, near the upper tip.

Length, .5 mm.

From St. Bernard, Louisiana, on white clover, March 24, 1912. (Parks).

STIGMAEOPSIS n. gen.

Basal part of mandibles united into a plate as in *Tetranychus,* and apical part long, styliform as in that genus. Legs thick throughout as in *Tenuipalpus,* but not wrinkled, two claws, tarsi as long as preceding joint; palpi long, large and porrect, with the thumb not extending beyond the claw. Skin not reticulate, but finely striated. Spinning small dense webs under which they live.

Stigmaeopsis celarius n. sp. (Pl. XV, figs. 9, 11).

Yellowish to greenish, mouth parts often reddish. Body about twice as long as broad, broadest in the middle, cephalothorax with two long bristles each side, one at humerus, four near tip of abdomen, a pair of large ones near the middle of dorsum, and several pairs of smaller ones above. Legs short, thick, hardly longer than the width of body, with a few simple hairs; one near tip of femur is very long. Palpi somewhat curved outwardly, with an out-turned curved apical claw, the thumb pointed. Mandibular plate narrowed at tip, not notched.

Length, .3 mm.

From Oneco, Florida, living in small colonies under small, dense, white webs which are placed here and there, often near ribs, on leaves of bamboo (*Bambusa metake*) (Sasscer).

The description of the above three new genera in the Tetranychidae offers an opportunity to tabulate the genera of this family known to occur in our country. The length of the tarsi compared with the preceding joint, a character hitherto unused, readily divides the family into two sections.

1—Tarsi (at least tarsus I) much shorter than the preceding joint; at least leg I as long, or longer, than body.....2
Tarsi as long as preceding joint; leg I rarely as long as the body 5
2—Front margin of cephalothorax with a thin four-lobed or cleft-plate; body with scale-like hairs.....*Bryobia.*
No such plate on front of body 3
3—Body with simple hairs; prostigmata in a horn each side at base of mandibles .....*Tetranobia.*
Body with spines or stiff serrate bristles; prostigmata not in a horn 4
4—Tarsi I enlarged a little toward tip; palpi stout.....*Tetranychina.*
Tarsi I tapering to tip; palpi small and slender; coxae close together .....*Neophyllobius.*
5—Dorsal surface divided into many small areas; claws two, very large .....*Raphignathus.*
Dorsal surface not so divided.....6
6—Palpi very slender, and not showing plainly the claw and the thumb arrangement; mandibles not elbowed near base.....7
Palpi stouter, showing plainly the claw and thumb arrangement 8
7—Legs transversely wrinkled; large, bordered ventral aperture; eyes present .....*Tenuipalpus.*

Legs not transversely wrinkled; ventral aperture smaller; eyes indistinct ..... *Tetranychoides.*

8—Prostigmata in a horn each side at base of mandibles; body short and broad, with large, prominent spines above... *Tetranychopsis.*

Prostigmata not in a horn, or body not with spines.....9

9—Mandibles styliform, elbowed near base; and with a supra-mandibular plate; body not elongate, and thumb not extending much beyond claw; spinning webs.....12

Mandibles less styliform, not elbowed near base; no supra-mandibular plate 10

10—Coxae close together; body rather short..... *Acheles.*

Coxae in two well-separated groups; body elongate.....11

11—Thumb extending much beyond the claw; palpi very long, *Caligonus.*

Thumb barely extending beyond the claw..... *Stigmaeus.*

12—Palpi very long, porrect; legs short and thick to tip.. *Stigmaeopsis.*

Palpi shorter, pendant; legs slender, and tapering to tips....13

13—Claws divided into four..... *Tetranychus.*

Claws single, entire..... *Oligonychus.*

Claws divided into two..... *Schizotetranychus.*

Paratetranychus Zacher = *Oligonychus* Berlese 1896.

This genus is made for *T. pilosus;* we have it in this country, and also in this genus are *T. bicolor, T. modestus, T. simplex* and *T. yothersi.*

Schizotetranychus Trägärdh.

This has recently been proposed for *T. schizopus* Zacher; *T. mytilaspidis* and *T. pratensis* will go in this group. Trägärdh has divided *Paratetranychus,* using *Neotetranychus* for those species which have the single claw without a cluster of hairs at base: *T. bicolor, T. modestus* would go in it. *T. latus* and *T. banksi* on account of reduced claws would form a new subgenus which may be called **Eutetranychus.**

PARASITOIDEA.

Spelaeorhynchus latus n. sp. (Pl. XIV. figs. 6, 8).

Yellowish; head and anterior part of shield brownish, a blackish spot on each side of the head and on each side of the shield in front; legs brownish yellow, except the pale articulations and bases of hairs. Head as long on sides as in middle, where it is faintly emarginate, above with crossed ridges. Dorsum of body as broad as long, broadest behind the middle, the posterior margin slightly emarginate in middle; a few short hairs above, one pair on front margin, on sides

one between legs I and II, one over leg II, two over leg III, and four on each posterior side, and three each side near tip, the latter longer than the others, and a few on disc, mostly near the outer margin. Dorsal shield about one and one-half times as long as broad, broadest at lateral angle, much narrowed behind; legs not as long as body, with short, simple bristles, mostly at base and tips of joints, and arising from hyaline spots. Venter with a triangular shield, broader than long, and with two hyaline spots each side, each with a hair; hind margin of coxa I with a spur behind; stigmal plate twice as long as broad.

Length, 1.6 mm.

From Obispo, Canal Zone, on bat, January (Goldman).

Differs from *S. praecursor* in that the body is broader behind, in longer dorsal shield, in head less produced in the middle, in the longer stigmal plate, in shorter sternal shield, and the less hairy body. I consider that this genus is fully as closely related to the Parasitidae as to the Ixodidae, and would place it in a family in the superfamily *Parasitoidea*. The head is very different from the capitulum of the ticks; and the sternal plate, posterior genital opening, and the retractile mandibles ally it more to the *Parasitidae*.

Iphiopsis obesus n. sp. (Pl. XV, fig. 12).

Yellowish brown. Body pyriform, about one and one-half times longer than broad; the dorsum with a few scattered minute hairs arising from hyaline dots, venter with larger short, almost spinelike hairs; legs with simple hairs, and four each side on the sternal plate, the middle ones close together. Sternal plate, concave behind, not reaching behind coxae III; genital plate U-shaped, and plate rather large, broad in front, anus near its hind margin; on the venter are two transverse, corneous plates, the outer one the larger. Spiracles not twice as long as broad, elliptical; legs very stout, hardly as long as the width of body, each tipped by a very large caroncle, most of the joints (except the last) broader than long; first pair of legs not as stout and shorter than the others; palpi very hairy near tip.

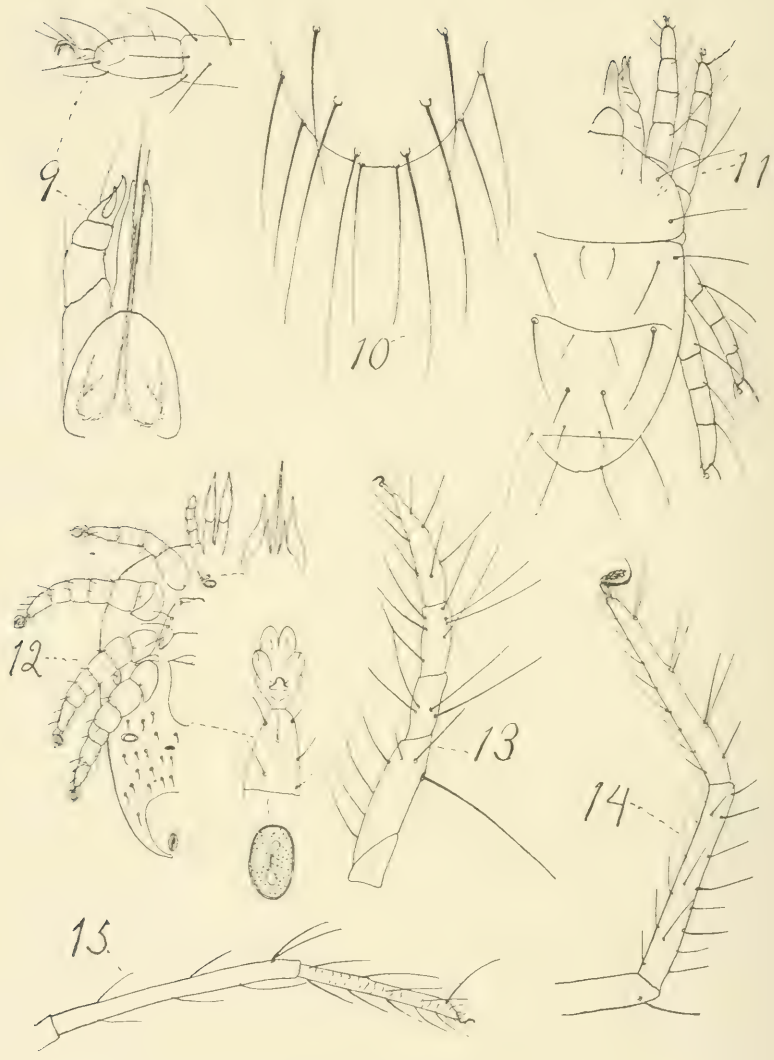
Length, .75 mm.

From Altamonte Springs, Florida (F. H. Lewton, coll.).

TYROGLYPHIDAE.

Tyroglyphus sacchari n. sp. (Pl. XIV, fig. 1; Pl. XV, fig. 10).

Body pyriform, about twice as long as broad, broadest behind the middle; cephalothorax rather long, much narrowed in front, the mandibles prominent. Dorsum with long, simple bristles behind, but not



NEW MITES—BANKS.

9, 11. STIGMAEOPSIS CELARIUS.
10. TYROGLYPHUS SACCHARI.
12. IPHIOPSIS OBESUS.
13. TETRANYCHUS ANTILLARUM.
14. NOTOPHALLUS VIRIDIS.
15. TETRANOBIA DECEPTA.

as long as in *T. lintneri;* in the female the bristles not as long as the body, in the male plainly as long as the body; also long humeral and cephalic bristles. In male the legs I and II are plainly larger than in the female; no spines on tarsi, only fine hairs, that at tip of penultimate joint as long as the tarsus, sense-hair on tarsus I longer than width of the joint at that place; tarsus I about as long as the two preceding joints together; tarsus IV slender, plainly a little longer than the two preceding joints together, only a faint, short hair at the tip of the hind tarsus.

Length, .35 mm.

From St. Croix, Danish West Indies, June 14, 1913, on sugar cane (D. Longfield Smith).

Chortoglyphus gracilipes n. sp. (Pl. XIV, fig. 2).

Colorless. Body broad, subglobose, in front the mouth parts form a prominent beak, the mandibles are very large and short, the palpi with slender joints. No hairs above on body. Legs very slender, but not nearly as long as the body; the femora, patellae and tibiae are subequal in length, the tarsi extremely slender and nearly as long as the three preceding joints together; claws minute, all tibiae with a very long hair at tip, and in hind legs some hairs near apex of femora and patellae; tarsi with a hair toward base beneath, but no preapical ones visible. Genital aperture of female very large, as large as entire beak, nearly as broad as long, angulate in front. At tip of body is a prominent down-curved spine, and each side of it a fine hair.

Length, .3 mm.

From Tampa, Florida, August 5, in tobacco infested with the cigarette beetle (Runner). The first record of this genus in our country.

Explanation of Plates.

Plate XIV.

Fig. 1. *Tyroglyphus sacchari,* legs I and IV.
2. *Chortoglyphus gracilipes,* under side.
3. *Tetranobia decepta,* mandible, palpus and spiracular horn.
4. *Notophallus viridis,* tarsus, palpus.
5. *Tetranychus antillarum,* palpus, mandible.
6. *Spelaeorhynchus latus,* dorsum.
7. *Tetranychina apicalis,* side, tarsus I, and palpus.
8. *Spelaeorhynchus latus,* sternum and spiracle.

Plate XV.

9. *Stigmaeopsis celarius,* tarsus I, palpus with supramandibular plate.
10. *Tyroglyphus sacchari,* tip of abdomen.
11. *Stigmaeopsis celarius,* dorsum.
12. *Iphiopsis obesus,* venter, peritreme, caroncle and epistome.
13. *Tetranychus antillarum,* leg I.
14. *Notophallus viridis,* leg I.
15. *Tetranobia decepta,* leg I.

New Bees from Costa Rica (Hym.).

By T. D. A. Cockerell, Boulder, Colorado.

Epicharis phenacura n. sp.

♂. Length about 21 mm.; anterior wing, 17 mm.; black, the head, legs and abdomen (but not the thorax) marked with yellow; eyes very large, orbits diverging below; vertex and front with dark brown hair, cheeks with brownish-white; mandibles black with minute yellow spot at base; labrum, clypeus (except a broad black band on each side, not reaching upper margin), semi-circular supraclypeal mark, lateral face-marks (which are narrow, with a linear extension above), and nearly all of front of the short and very thick scape, all light yellow; clypeal ridges distinct, but obtuse; flagellum dark.

Thorax with short dense hair, dark greyish-brown (seal-brown) above, gradually becoming rather paler below, scutellum bigibbous; tegulae dark; wings fuliginous; upper and lower sides of second submarginal cell nearly parallel, recurrent nervure joining lower side very slightly beyond the middle; knees with yellow spots; anterior tibia with yellow band on basal half; spur of middle tibia contorted, and abruptly bent apically; tarsi ferruginous, more or less infuscated basally, apical joint mainly yellow; hind basitarsi broad and long, pale reddish, with a prominent angle in front beyond the middle; hind tibiae and especially tarsi with long ochreous hair behind; hind femora with brownish-black hair.

Abdomen not at all metallic; first segment with a narrow yellow band, failing in middle; segments 2 to 4 yellow, except a broad apical dark band; segments 5 to 7 honey-color; apical plate very large, narrowly truncate at end.

San Carlos, Costa Rica (Schild and Burgdorf). U. S. Nat. Museum. This remarkable species resembles *Centris flavopicta* Smith in many respects, but it has the structure of *Epicharis*. In Friese's table of *Epicharis* it runs near *E. fasciata* Lep., from Bahia, but is quite distinct.

Epicharis conura n. sp.

♀. Length 22-24 mm.; anterior wing 16 mm.; black, with conical ferruginous abdomen (not marked with yellow), the first segment with the dorsal surface black, but the basin (especially its margins) red; hair of head and thorax mainly black, but becoming grey on cheeks, sides of thorax and metathorax, quite pale on lower part of pleura; mandibles black; labrum large, with three small yellow spots or a large yellow triangle; clypeus with a minute yellow dot in middle of the flattened, shining disc, and a pair of spots, more or less obsolete, near lower margin; a small triangular yellow supraclypeal mark; lateral

face-marks elongate, more or less semi-lunar, contiguous throughout their length with orbits; scape very short and thick, without light markings; apex of third antennal joint, the short fourth joint, red beneath, the extreme apex of flagellum also reddish; mesothorax granular, with scattered small shallow punctures; scutellum deeply emarginate behind; tegulae black; wings dark fuliginous; legs black, the anterior and middle ones with mainly black hair, the hind tibiae and tarsi with an enormous pale golden scopa; abdomen dull; apical plate concave, broadly truncate.

San Carlos, Costa Rica (Schild and Burgdorf). U. S. Nat. Museum. One specimen bears the number 5. Related to *E. conica* Smith (which I have from Maroni, Guyana), but larger, with yellow markings on head in female, and the scutellum differently formed.

Life-history and Habits of the Larger Waterstrider, Gerris remigis Say (Hem.).

By J. R. de la Torre Bueno, White Plains, New York.

Of all the bugs I know, I can think of none so amorous as our common large water-strider, *Gerris remigis* of Say. From the earliest days of spring, when the Frost King releases the waters from his bondage, till the cloudy days of autumn, when the leaves fall and the winds grow bleak at his return, these beasties are common and familiar sights to the lover of the quiet flowing waters running to the distant seas. In these haunts, in some still little bay or moveless backwater, under a bridge, or in the shadow of a tree, or in the cool recesses of an overhanging bank, you may see *remigis* gathered in numbers, rowing silently about, now and again skipping to escape the maw of some greedy fish, or pouncing on some unfortunate insect fallen into the water and struggling to escape from the clutches of that deadly element. Here they rear large families and spend at ease the sultry dog-days. When winter comes again the old generation have passed away and their young descendants, now full-grown, seek shelter against frost and snow under nearby logs or stones on the banks, or crevices in them; there to sleep until in the round of days Old Sol routs the chills of winter and spring once more ushers in the leaves

and flowers, and vivifies all the reproductive powers of nature, in which *Gerris* is not the least factor.

That great American naturalist, Thomas Say, who, finding himself in a new Paradise, like Father Adam of old, spent his days busily giving names to the theretofore nameless multitude of living things which delighted his eye, was the first to recognize *Gerris remigis* as distinct from the European *G. paludum* Fabricius, describing it in 1832. Since his day other entomologists have referred to his species more or less at length, among them Packard, Comstock, Uhler (who has given by far the best account of the insect in the Standard Natural History), and Howard, till we come to the present, when it has been the subject of many short articles and studies. Uhler has been heretofore the source of most of our information on this species and in the work mentioned he briefly describes its habits. The scantiness of information about the life and habits of *Gerris remigis* and of the other nearly-related forms led me to try to work out a life-history by breeding the species in aquaria. This was begun some nine or ten years ago and brought to a partial close in 1908, when, after some trouble, a single specimen was brought through to maturity.

In nature the life-history of *Gerris remigis* appears to be briefly this: Breeding and oviposition begin as early as February, or in the first warm days of spring. (I have found them mating in early April, while one still slept under a stone.) It is seemingly continuous all through the summer, and it is not unusual to find nymphs in various stages in company with the adults. I have found them thus in late May and as late as the middle of October, nymphs in two or three stages being together. The mother lays her cylindrical pearly eggs end to end along the edges of grasses or other vegetation growing into the water, to which she attaches them by means of a colorless waterproof glue. Here they develop more or less quickly, according to the temperature, the little bugs showing day by day more and more plainly through the shell. At the end of a week or ten days they burst the shell and escape into the water. The little bugs remain submerged for an hour or two, swimming about, until finally they succeed in piercing the surface

film and by main strength wrench themselves free from its fatal clutches. Some, indeed, perish by drowning, although their vitality is surprising. In time, some six days or so, they cast their skins with accompanying changes in structure. This takes place four times more before they reach the perfect insect at the end of about six weeks. It is thus possible for *G. remigis* to have at least three generations in a summer, if not more, depending, of course, on the length and temperature of the season.

For food *Gerris remigis* depends on other insects and it is very voracious. I have found it sucking *Capnia necydaloides,* the small stone-fly, abundant in this latitude, so very early in the spring that it is frequently frozen into the snow when the sun that melted its surface no longer shines upon it.

In the aquaria it is fed flies, the most common, abundant and obnoxious insect of the summer, although any other insect would do as well. A specimen I had in an aquarium played havoc with the other living things, devouring such tough customers as *Notonecta* and *Dineutes,* after a long struggle, in which each was endeavoring to get the other. It finally perished to a *Notonecta irrorata.* If sufficiently hungry they will feed on their own nymphs and even on each other.

Polymorphism is not displayed by this species, which is only dimorphic, being found, but very rarely, fully winged, its common form being apterous. The possession of wings always causes a change in the structure of the thorax to accommodate the much enlarged muscles which the use of organs of flight requires. These winged adults are generally found solitary in the most unlikely places—isolated little pools, springs, rock-holes, beach drift[1], far from the favorite haunts of this stream-loving bug.

The manner in which it uses its legs for propulsion is quite interesting. The first pair is prehensile and is used to hold its prey. In locomotion its tarsi only touch the surface of the water. The bug rows itself with the middle legs only, the tarsi being in contact with the water along their entire length,

[1] 1915. Heteroptera in Beach Drift. Bueno, Ent. News xxvi: 277.

while the third pair is used only in steering, both tibia and tarsus lying on the surface for this purpose. The wings, when present, are serviceable, the European forms being recorded as using them in night flights, not observed with our species.

It is said that when closely pursued *Gerris* dives to escape and swims under water, but I have never been able to induce or force any of those I have seen to perform for me.

Gerris remigis is parasitized by a bright red water mite, which attacks it in all stages of development. I have found in midsummer an individual with head completely covered with these larval mites, excepting the eyes and beak; a winged specimen had the thorax invaded. In September a young nymph was taken similarly infested. Matheson and Crosby[2] observed the minute Proctotrypid, *Limnodytes gerriphagus,* also known in Europe as a parasite of gerrid eggs, ovipositing on those of *remigis,* one to each egg.

The external anatomy of *Gerris remigis* is fairly known, but so-far no one has worked out the internal anatomy and physiology of the species. Dufour[3] investigated the anatomy of its European congener, *Gerris najas* de Geer (*canalium* Dufour). He studied the digestive tract, the hepatic and the reproductive systems, and in pl. V, Figs. 59-64, he illustrated certain anatomical details and also the digestive tract. He states that "the stigmata of *Gerris* are of microscopic size and very difficult to detect because of the lustrous silky pile which covers them. There are six pairs, all near the outer edge of the venter, outside of darker lines." He also says the trachea are tubular and elastic and of capillary fineness. Dufour also remarks that it has an alcalescent odor and quotes De Geer as calling it buggy. I myself have not noted this in *remigis.* Bergroth[4] describes a perforated median tubercle in the metasternum, which he calls "omphalium," and queries if it be the unpaired

[2] 1912. Ann. Ent. Soc. Am. v: 67. Aquatic Hymenoptera in America. Robert Matheson and C. R. Crosby.

[3] 1833. Recherches Anatomiques et Physiologiques sur les Hemipteres. Memoires de Savans Etrangers, pp. 197, 346, 371, 400.

[4] 1902. On the Thorax of the Gerridae, Ent. Mo. Mag. (2), xiii, 258-260.

opening of the stink-gland. This omphalium is perfectly visible in *G. remigis,* in specimens with a reddish venter; in dark individuals it is difficult to see, but with care may be detected readily. It also appears to vary in size somewhat and is placed at the caudal margin of the metasternum, right at the suture. N. Leon[5] states that the *Gerridae* have labial palpi, which I have not detected in our species. Fyles[6] finds *remigis* weighs one grain. Henneguy[7] refers to the number and structure of the malpighian tubes in the genus and to the pulsatile organs in the legs (p. 87), quoting Locy and Behn. Uhler records that it varies in color, a circumstance scarcely worth noting, as it cuts no figure specifically, which is the reason for its mention here. Some species are recorded to fly by night, but ours have not been observed doing so. Two fossil species of the genus are known from Canada, perhaps the ancestors of our forms.

Gerris remigis is extremely hard to keep in confinement. No sooner is it in an aquarium than it begins to dash itself madly against the sides. Now and again a tamer specimen is secured and such will even breed in confinement. Ordinarily, however, they get water-logged from their frantic efforts and, sinking, drown. But even these sunken individuals, after some time, as Mr. C. E. Olsen has observed, if rescued before it is too late and carefully dried, may return to active life. *Gerris remigis,* like all the other semi-aquatics, is densely clothed with a velvety pubescence in all instars, which it furbishes and preens and currycombs constantly, by means of the tibial combs, with which each tibia is furnished, a toilet necessity found in them from their earliest youth.

A very careful study of the reactions of *Gerris* has been made by Christine Essenberg[8]. She studied the Californian

[5] 1897. Beiträge zur Kenntniss des Labiums der Hydrocoren. Zool. Anz. Bd. 20, No. 527.

[6] 1910. 41st Annual Report of the Entomological Society of Ontario, p. 53.

[7] 1904. Les Insectes, p. 80.

[8] 1915. Journ. An. Behav. v., No. 5, pp. 307-402. The Habits of the Water Strider Gerris remigis.

Gerris orba Stål, which differs in some habits from ours, for instance, in floating on its back, something never noted in *remigis,* and in taking to land to escape pursuit. *Remigis* generally skates away at top speed and is quite expert at turning and twisting to avoid an enemy. She also notes death-feigning, especially in some individuals. A number of other interesting tests were made which might with advantage be repeated on *Gerris remigis.*

Life history notes on *Gerris conformis* and *Limnogonus hesione* were published by Carl J. Drake[9].

Gerris remigis is well illustrated in a number of places, the best being Fig. 8 in Comstock's Insect Life, and Fig. 225 in Folsom's Entomology.

Gerris remigis mates "par superposition," as Gadeau de Kerville has it[10] and as Amyot and Serville describe for *najas*[11]. The period of gestation is not known, nor the number of eggs one female is capable of laying, although this has been determined for other species of the genus.

Egg. Long cylindrical, rounded at both ends and slightly concave at the micropylar end. There is one micropyle, and the chorion is somewhat thickened at this end, except at the concavity, where it thins somewhat. It is clear white in color when freshly deposited and the chorion is roughened superficially but not sculptured in regular designs. The egg is attached to the aquatic plants by a clear, colorless waterproof glue secreted by the female.

This reproduces the observations of Dufour (*op. c.*) already cited, and those of Uhler (*op. c.*).

In an aquarium they were attached to a little piece of wood, provided as a resting place, especially on the submerged part, but apparently were not glued on. The eggs develope in about two weeks or ten days, and the little bug emerges. It does not hatch out through a cap or lid, as do many of the Heteroptera, but through a simple slit lengthwise of the chorion, which splits it for a varying distance in a straight line, at times not quite one-half its length, at others nearly to the other end from the micropyle.

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[9]1915. Ohio Nat. xv: 503.

[10]1902. Bull. Soc. Ent. Fr., p. 68.

[11]1846. Hist. Nat. Hem. p. 415.

Nearly immediately on emerging the nymph casts a diaphanous pellicle, very soft and hairy, so soft that it does not retain its shape at all and is nearly invisible on the surface of the water. This pellicle, which I prefer to consider in the nature of an amnion rather than as a true molt, shows the one-jointed tarsi, subapical claws, tibial combs on all legs, but the other details are much obscured. The covering hairs are long and matted. As already noted the just-hatched nymphs sink and have to break through the surface film before beginning active life.

Nymph, First Instar. The antennae are moderately stout, joint 2 shortest, 4 longest, as long as 1 and 3 together, next in length being 1 and 3. The ommatidia are round. All the tarsi are 1-jointed and all the tibiae have combs. The first pair of legs is shortest and the 3d longest; the tibia and femur are subequal in the first pair; in the second the tibia is longer than the femur and in the third shorter. The legs are set apparently very far back, due to the excessive shortness of the abdomen arising from the very narrow, ringlike segments. The head is rounded and hairy with a few scattering long setae. The rostrum is stout, with the third joint longest, then the 4th, followed by the 2d and 1st in that order. The 4th is black and tapering.

Second Instar. This instar is much the same as the first, except that the legs are not apparently so far back on account of the lengthening of the abdomen. It is also changed as follows: The first pair of legs continues the shortest, but the second is the longest; the tibia of the first pair is shorter than the femur and in the second pair they are subequal, while in the third pair the tibia continues shorter. The second joint of the antennae is the shortest; the first and third are subequal and the fourth longest as before. In the cast skin in this and all instars, the second joint appears cupped at the distal end and the third joint is sunk into it nearly half way. In this instar in the cast skin, from which these dimensions and proportions were taken, a long spiracle is seen on the propleurae, near the upper edge.

The nymph in this and other instars was mounted in balsam, and in this case too much shrunk for exact study.

On emerging from the first molt, the nymph is very translucent and rather colorless, excepting the eyes, which are red.

Third Instar. In this the nymph is as in the first, except as follows: The anterior femur and tibia are subequal, the proportional length of the legs and proportional length of leg joints remaining as before. The antennae are as before, except that the third joint is longer than the second, the first longer than either, the fourth continuing the longest.

Fourth Instar. The greater part of the characteristics of the nymph are as in the preceding instar. The antennal joints show the greatest change. Joints 1 and 4 are equal and longest; joint 2 continues the shortest, half as long as 1 and two-thirds as long as 3. The hind and middle femora show dark spots from each of which springs a long hair or seta. Scattered thorns are also seen on them.

Fifth Instar. This cannot be described, as the only specimen brought to maturity died while molting and the cast skin was not available. The excessive heat and moisture of the aquarium apparently weakened it.

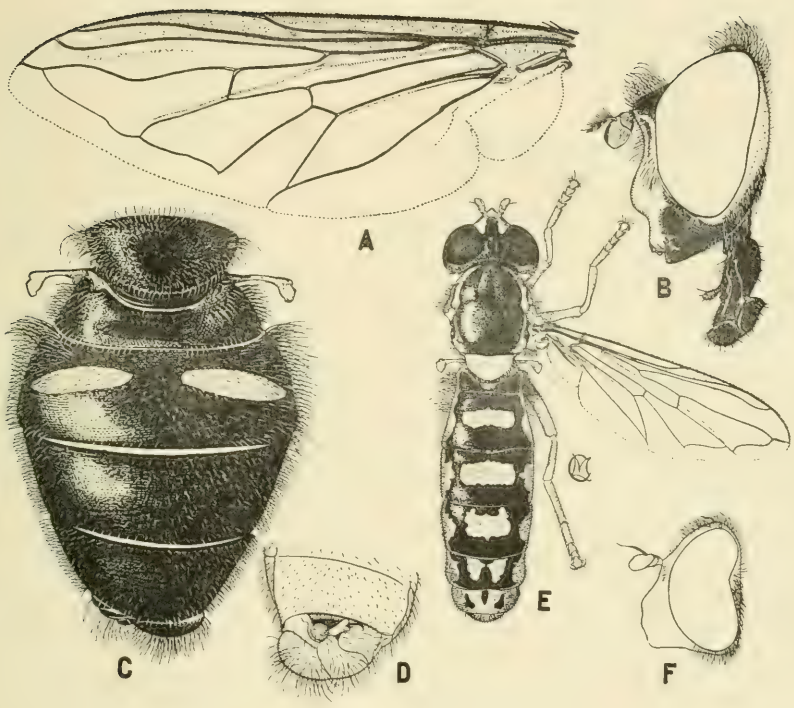
Burmeister states that the nymphs of *Gerris* may be distinguished from the adult by having single-jointed tarsi. This is the case with *G. remigis,* which shows no sign of two tarsal joints in the fourth instar, but has them in the adult.

Table of development of Gerris remigis Say.

Oviposited.....April 6; May 31; Aug. 3	12	days
Emerged.....April 19; June 12; Aug. 15		
Molt I.....April 26; June 16, 17, 18; Aug. 21	6	"
Molt II.....June 20, 21, 22, 24; Aug. 27	6	"
Molt III.....June 25, 30; Sept. 1	5	"
Molt IV.....July 5, 6; Sept. 8	7	"
Molt V.....Sept. 18	10	"
Total days—37 (four molts).....	46	(Complete cycle)

From the above it is seen that the embryonal and four nymphal stages took thirty-seven days, from the end of May to early July; the complete cycle, from oviposition to the adult, took in August and September, forty-six days, which, assuming a period of ten days for the last nymph, would make the time nearly equal. These are aquarium results, and this condition makes for stability, in that the moisture, heat and food are all there, and that there are not the fluctuations there would be in the open, with cool June days and a precarious food supply. In nature, I would look for decided variations in the period, depending on the temperature largely. The embryonal period ranged from ten to twelve days; the first nymph from four to seven; the second, four to six; the third, from five to ten; the fourth, from five to ten, and the fifth (one example), was ten days. Mr. C. E. Olsen, working independently, found the fifth instar fifteen days long, in late June.

In conclusion I urge the complete and detailed study of the life history of this bug, which, it is evident from this rough preliminary sketch, presents many interesting problems.



NEW SYRPHIDAE—METCALF.

A-D. CINXIA CAROLINENSIS. E, F. SPHAEROPHORIA CLEOAE.

Two new Syrphidae (Diptera) from Eastern North America.

By C. L. Metcalf, Ohio State University, Columbus.

(Plate XVI).

Cinxia* carolinensis new species (Plate XVI, figs. A, B, C, D).

At once distinguished from the described North American species in lacking the black facial stripe and in having but a single fascia, or pair of spots, on the abdomen.

♂. Length 10 to 11 mm. Vertex black, but little shining, with dusky yellow pile much lighter on the occiput. The eyes contiguous or nearly so for about the length of the vertical triangle. Frontal triangle densely whitish yellow pollinose, except for a shining black lunule above the base of the antennae and a very slender, median, impressed line. In some lights the blackish ground color shows through, especially next the eyes. The front covered with very delicate, silvery pile which continues down the sides of the face, gradually thinning on anterior orbits to the lower corner of the eye. Face yellow; whitish yellow pollinose like the frons, except for a broad glabrous band over the tubercle, but not reaching the base of the antennae, which is shining waxy yellow. Cheeks (jowls) brownish black with moderate pale pile and a broad contiguous band in front of the jowls from eye to oral margin deep shining black, bare. Anterior mouth edge narrowly blackened.

Face in profile (Plate XVI, Fig. B) much produced downward and forward, more than usually concave below the antennae and with a prominent tubercle about equalling the frontal prominence; abruptly constricted below the tubercle and thence straight to oral margin. Lower mouth edge convex, forming with the plane of the occiput an angle of about 130°. Posterior orbits somewhat inflated below, whitish pollinose, and with delicate pale pile. Proboscis and palpi entirely brownish black, about as long as the depth of the eye.

Antennae brownish yellow, the first two joints darker, the third joint subquadrate, with angles much rounded, a fifth deeper than its length on the inner side beyond second joint. The arista two and one-half times this length, basal, reddish yellow, plumose, with about a dozen rays on the upper side not extending to the tip and two-thirds as many below, the latter wanting on the basal third and at the tip.

Mesonotum moderately shining bronze black, with thick but delicate yellow pile, humeri whitish pollinose. The scutellum obscure reddish brown to black with similar pile. Pleurae shining black with thinner pile. A small indistinct brownish yellow spot on the upper sterno-

**Cinxia* Meigen (1800)—*Sericomyia* Meigen (1803).

pleura and another above the middle coxa on the pteropleura. Plumula and tegulae white, the latter with yellowish pile, halteres yellow.

Abdomen (Plate XVI, Fig. C) about one-fifth longer, and the second and third segments broader, than the thorax, broadest at end of second segment; black, moderately shining, rather strongly arched, with moderate pile, which is black on the posterior margin of the second and on the disk of the third and fourth segments, elsewhere yellowish, longer on the venter, on the genitalia and at the sides of the second segment where it is also denser, but in no place obscuring the ground color. An interrupted yellow fascia on the anterior half of the second segment which takes the form of two narrow, elongate, slightly oblique spots, a little less than one-fourth the width of the segment and attenuated somewhat toward either end; interrupted by more than twice their width and separated from the lateral margin by one-half more than their width. The black of the segment contiguous to these spots is opaque. Elsewhere the abdomen is immaculate except for a slight margin of yellow on some of the genital plates posterior to the fourth segment. Venter with yellow as follows: posterior angles and narrow posterior margin of first segment, the second segment except a median black spot, and a stripe on the posterior margin of the third segment. Elsewhere, including the genitalia, black, shining.

Wings (Plate XVI, Fig. A) on the costal third brownish, clouded, occupying most of the costal, subcostal and marginal cells. Veins brownish throughout. Anterior cross-vein four-ninths the distance from base of discal cell, the third longitudinal vein broadly but considerably bent into the first posterior cell, the latter pediform.

All the femora slightly thickened, hind pair very slightly curved; including the coxae, reddish to blackish brown, the tips yellow. Tibiae yellowish, the anterior ones slightly, the hind pair much infuscated in the middle. Tarsi yellow, the last two joints brownish. Pile chiefly pale yellow, longer on the femora.

Described from two males: The *type* collected by the writer at Raleigh, North Carolina, in mid-April, 1914, about blossoming pear; in the author's collection. *Paratype* (without head) collected by Mr. Franklin Sherman, Jr., at Raleigh, North Carolina, in late March, 1908; in the collection of the North Carolina Department of Agriculture.

Sphaerophoria cleoae new species (Plate XVI, figs. E, F).

♀. Length 8 mm. Vertex deep blue black, moderately shining. The black encroaches to a variable extent on the frons, particularly as a median stripe narrowing toward, and not reaching more than half-way to, the base of the antennae, or sometimes reaching nearly to the latter

and widening slightly to form a biconcave arch above their bases. The black also projects on each side as slight points along the eyes. Remainder of the frons, the face and cheeks entirely wax yellow, shining, or, rarely, the cheeks and jowls slightly infuscated or even entirely blackened. The anterior mouth edge sometimes narrowly blackish and more or less infuscation on the facial tubercle but not forming a definite stripe. Posterior orbits densely pollinose and pilose; with somewhat flattened silvery white pile on lower half, infuscated and with delicate brownish yellow pile above. Pile of vertex black, that of frons mostly pale yellow, delicate. The face nearly bare a few very short delicate pale yellow hairs. Cheeks long yellow pilose. Antennae of the same color as the face, the third segment rounded, about as deep as long, the upper and distal parts more or less infuscated; the first and second segments entirely pale yellow with minute stiff black hairs especially on the upper side. Arista brownish, bare, somewhat thickened on the basal third.

Face in profile (Plate XVI, Fig. F) prominent, slightly concave from antennae to tubercle and again slightly constricted before the mouth edge. On lower part produced forward about half the width of the eye. Anterior mouth edge not equaling the tubercle.

Thorax brownish black, moderately shining, with two faintly whitish pollinose, narrowly separated stripes, obsolete behind. The lateral margins broadly and brightly yellow on humeri and to the suture, thence a little less brightly but still distinctly yellowish to the scutellum. Pleurae with the usual distinct yellowish spots on the prothorax, meso- and meta-pleurae and on the upper parts of sterno- and ptero-pleurae. Scutellum, plumula, squamae and halteres entirely yellowish. Pile of the dorsum yellow, fine, moderately abundant; the lateral margins, the scutellum, and more or less of pleurae with delicate pale yellow pile.

Abdomen black, with doubly interrupted yellow fasciae, moderately shining, the lateral margins continuously yellow. First segment metallic shining, the lateral margins broadly and a very slender line on the anterior margin yellow. *Second, third and fourth segments each with an arcuate, yellow crossband, which is completely or nearly interrupted on each side about a third of the way from the lateral margin to the middle line.* The lateral parts of the arcuate bands consist of more or less prominent angular projections antero-mediad from the lateral margin. Fifth and sixth segments each with an interrupted, arcuate yellow band, the halves resolved into somewhat hammerlike yellowish spots. Sometimes these segments all yellowish except a median spot and one on each side blackish. Narrow posterior margins of third to fifth segments yellowish. Remainder of abdomen and the venter all yellowish.

Legs including the coxae and trochanters pale yellowish with fine black hairs on femora and hind tibiae and tarsi; on the coxae long pale

yellowish. Tarsi usually slightly infuscated, rarely quite black. Wings transparent, the stigma alone slightly yellowish; veins brownish.

Described from fifteen females taken at Orono, Maine, chiefly about blossoming mustard. Seven paratypes August 11, 1915; the *type* August 16, 1915, three paratypes August 19, 1915, three paratypes August 24, 1915, and one paratype July 12, 1916. Named in honor of Mrs. Cleo Fouch Metcalf, who collected the first and the type specimens. The type is in the collection of the writer, paratypes in the collections of the Maine Agriculture Experiment Station and the Ohio State University.

EXPLANATION OF PLATE XVI.

Cinxia carolinensis n. sp. ♂.

Fig. A—Wing, X 8.
Fig. B—Head, lateral view, X 8.
Fig. C—Scutellum and abdomen, dorsal view, X 8.
Fig. D—Genitalia, ventral view, X 7.

Sphaerophoria cleoae n. sp. ♀.

Fig. E—Dorsal view, X 5.5.
Fig. F—Head, lateral view, X 8.

Lycaena lygdamus Doubleday and its Races with a Description of a New One (Lep.).

By HENRY SKINNER.

So far as I am aware the typical form of this species is very rare in collections. We have two specimens collected by James Ridings in Hampshire County, Virginia (now West Virginia) in 1857. Last spring, Morgan Hebard presented a fine pair to the Academy, taken at Hot Springs, Virginia, May 7th, at an elevation of 2,500 feet. These specimens agree perfectly with the excellent description of the species by Doubleday. The type locality of *lygdamus* was, in all probability, Jacksonborough, Screven County, Georgia. This county is on the extreme eastern border of the State about the middle line. They were collected by Abbot and we are indebted to Dr. S. H. Scudder for information in regard to this famous old collector and artist.* Abbot lived in Jacksonborough, but the town no longer

*Butts. Eastern U. S. & Can. 1, p. 651.

exists. Doubleday says the specimens he described in 1842 were sent to England by Abbot, that they were taken in pine woods, March 21st, and that the species is very rare. Doubleday says Abbot confounded the species with *Papilio erebus* Fabr. = *damaetus* Hübn.

The next name proposed was *behri* Edw. in 1862, and the locality given was "California, from Dr. Behr." It is likely from this that the type locality was San Francisco. *Behri* is larger, lighter in color and of more violet blue than *lygdamus* and the spots on the underside of the primaries are larger than those of the secondaries, whereas in *lygdamus* the spots are of the same size.

Oro Scudder was described in 1876, and the author says, "I have only seen this species from Colorado." The description says it is close to *behri* but averages larger. The upper surface of the wings of the male is almost entirely destitute of the pruinose bloom of *Nomiades lygdamus* and is of a tenderer blue, which permits all the spots of the under surface to be seen upon the upper side. *Oro* is exceedingly close to *behri* and some specimens are difficult to separate except by the locality labels. The name may be retained for the central area form or the connecting link.

Couperi Grote was described in 1874, from the island of Anticosta, Canada. Scudder says it extends from Anticosta and southern Labrador to Lake Winnipeg and the Saskatchewan. *Afra* Edw., 1883, was described from "the Deer River" country, from specimens taken by Captain Geddes. This was described from the female and may be considered a synonym of *couperi*. *Couperi* covers the area from Illinois to Alaska and from Canada to Colorado. It varies greatly in size but is smaller than *behri* and *oro*. I can't think of any species of *Lycaena* that varies more in size than *lygdamus* and its races.

There is another form for which I propose the name

Lycaena lygdamus columbia new race.

It is of a deeper shade of blue than the other forms and the texture of the wings is less delicate. The spots on the underside of the wings are larger than in *behri*, but not as large as

those of *lygdamus,* nor is it as dark in color below as *lygdamus.* It is the largest form, the males expanding 30 mm. and the females a trifle more.

Described from *type,* male, from Port Columbia, Washington, April 25th, 1916, and *paratypes,* one male and two females, with the same data. They were sent to me by Mr. J. C. Hopfinger. There are other specimens from Olympia, Washington; Corfield, Vancouver; and Lake Tahoe, California. Typical *lygdamus* is darker in color on the underside and the black spots are larger and the surrounding white line relatively smaller than in any of its races.

Scudder made *lygdamus* the type of his genus *Glaucopsyche,* but later* placed it as a synonym of *Nomiades* Hübn. The species nearest to *lygdamus* is *xerces* Boisduval and its forms. I have examined about 150 specimens of *lygdamus* and its forms from various localities. The species flies during March, April and May, according to latitude and elevation, but is found a trifle later in the far north. We possess a few specimens taken in early June at Eagle, Alaska, and at Banff, Alberta, Canada. Our specimens are from Eagle, Alaska; Banff, Alberta; Great Slave Lake, Canada; Beulah, Manitoba; Labrador; Anticosta, Quebec; Osoyoos, British Columbia; Corfield, Vancouver; Port Columbia, Washington; Umatilla and Fort Klamath, Oregon; Los Angeles, Riverside, Truckee and Lake Tahoe, California; St. Ignatius, Montana; Madison, Wisconsin; Taylors Falls, Minnesota; Denver and Fort Collins, Colorado; Chicago, Illinois; Virginia and West Virginia.

Additions to Insects of New Jersey, No. 5.†

By Harry B. Weiss, New Brunswick, N. J.

According to Mr. Chas. Schaeffer, in the Journal of the New York Entomological Society, vol. 24, p. 167, *Elater carbonicolor* Esch., listed in Smith's "Insects of New Jersey" on page 285, is an Alaskan species and should therefore be dropped.

*Can. Ent. 1876, p. 21.

†See the News, xxvii, p. 162. April, 1916.

The species in question was *Elater rubricus* Say wrongly identified as *carbonicolor.*

The present list contains over one hundred species and I am greatly indebted to Mr. S. A. Rohwer, Mr. Morgan Hebard, Mr. Harold Morrison, Mr. E. R. Sasscer and Miss E. M. Patch for identifications in their respective fields and also to Mr. H. B. Scammell, Mr. A. S. Nicolay and others whose names are mentioned in the text for their kindness in notifying me of their findings.

Inasmuch as the 1909 list contains many Staten Island records, attention is called to the following publications of Mr. Wm. T. Davis dealing with the insect fauna of that island: *List of Macrolepidoptera of Staten Island* (Proc. S. I. Assoc. Arts & Sciences, vol. III, part I, October, December, 1909), *Notes on Macrolepidoptera of Staten Island* (Proc. S. I. A. A. S. vol. IV, parts I and II, October, 1911, May, 1912, vol. V, parts III and IV, October, 1914, May, 1915).

Order NEUROPTERA.

Rhyacophila formosa Banks. Delaware Water Gap. (Slosson) (Trans. Amer. Ent. Soc. vol. 37, p. 353).

Wormaldia plutonis Banks. Delaware Water Gap. (Slosson) (T. A. E. S. vol. 37, p. 358).

Order HOMOPTERA.

Micrutalis calva Say. Pemberton, June 21, on black walnut. (H. B. Scammell).

Thionea bullata Say. New Brunswick, VII, 24. (Coll).

Stenocranus dorsalis Van D. Whitesbog, Oct. 21, sweeping cranberry vines. (H. B. Scammell).

Megamelus nigrodorsum Crawf. Pemberton, Oct., 1914 (H. K. Plank) July, 1914. (H. B. Scammell).

Diedranotropis cubana Crawf. Whitesbog, Oct., 1914. (H. B. Scammell).

Platymetopius irroratus Van D. Pemberton, Sept., 1914, Browns Mills, June, 1915. (H. B. Scammell).

Platymetopius nasutus Van D. Pemberton, June, 1914. (H. B. Scammell).

Thamnotettix melanogaster Prov. Cookstown, Oct., 1914, (H. K. Plank).

Psyllia buxi Linn. Springfield, Rutherford, East Orange, Riverton, July, August. (Dickerson & Weiss). An imported species which has become established in New Jersey on boxwood.

Trioza alacris Flor. Rutherford and other places on *Laurus nobilis* in greenhouses during winter and outside during summer. Nymphs curl leaves of host doing considerable damage. Introduced several years ago from Belgium. (H. B. Weiss).

Aphis pseudobrassicae Davis. Freehold (Headlee) and undoubtedly other parts of the state. The false cabbage aphis.

Macrosiphum luteum Buckton. Summit, in greenhouse on orchids. (H. B. Weiss).

Rhopalosiphum rhois Monell. Arlington, July 8 on *Rhus copallina.* (Dickerson & Weiss).

Saltusaphis americanus Baker. Whitesbog, Oct. 21, 1914, on bog grass. (H. B. Scammell). (Canad. Ent. vol. 49, p. 3).

Saltusaphis ballii Gill. Whitesbog, XI-13, 1915, on 3-square grass. (H. B. Scammell). (Canad. Ent. vol. 49, p. 4).

Saltusaphis elongatus Baker. Whitesbog, Oct. 21, 1914, on bog grass. (Scammell & Plank) (Canad. Ent. vol. 49, p. 6).

Asterolecanium hemisphaericum Kuwana. Riverton, May 18, on bamboo. Introduced several years ago from Japan and evidently doing well in southern New Jersey. (H. B. Weiss).

Odonaspis secretus Ckll. Riverton, May 18, on *Bambusa metake.* Imported from Japan several years ago and doing well in N. J. (H. B. Weiss).

Phenacaspis nyssae Comst. Milltown, July 22, on sour gum. (Dickerson & Weiss).

Order HEMIPTERA.

Podisus fretus Olsen. New Brunswick, V, 18. (Bull. Brook. Ent. Soc. vol. XI, p. 82).

Stephanitis rhododendri Horv. Should replace *Leptobyrsa explanata* Heid. of the 1909 list according to G. C. Champion in Ent. Mon. Mag. Sept., 1916, p. 207.

Microvelia fontinalis Torre Bueno. Westfield, Sept. 3, 1904. (Torre Bueno). (Bull. Brook. Ent. Soc. vol. XI, p. 58).

Phymata vicina Handl. Madison (Paulmier), Lakehurst, June (Barber). (J. N. Y. E. S. vol. 20, p. 134).

Tenthecoris bicolor Scott. Occasionally found in greenhouses feeding on Cattleya orchids. (H. B. Weiss).

Paracalocoris scrupeus var. **diops** McAtee, Lakehurst, VI-30 (W. T. Davis); var. **bidens** McA., Lakehurst, VI-30, Singac, VI-15; Ramsey, VI-23 (W. T. Davis). (Ann. Ent. Soc. Amer. vol. IX, No. 4).

Paracalocoris colon var. **colonus** McAtee. Lake Hopatcong, VII-4 (W. T. Davis). Trenton (A. E. S. A. vol. IX, No. 4).

Paracalocoris adustus McAtee. Lakehurst, VI-13 (W. T. Davis). (A. E. S. A. vol. IX, No. 4).

Order ORTHOPTERA.

Blaberus discoidalis Serv. Rutherford, Secaucus, in greenhouses. Introduced from South America. (H. B. Weiss).

Conocephalus crepitans Scudder. Erma, August, 1910 (W. T. Davis). (Jour. N. Y. Ent. Soc. vol. 21, p. 178).

Conocephalus melanorhinus R. & H. Tuckerton, Sept. 1, 1907 (W. T. Davis). (Jour. N. Y. Ent. Soc. vol. 21, p. 177).

Diestrammena marmorata Haan. In greenhouses in New Jersey (H. B. Weiss).

Order COLEOPTERA.

Calosoma sycophanta L. Ramsey (Sleight). (Jour. N. Y. Ent. Soc. vol. 20, p. 205).

Elaphrus cicatricosus Lec. Ft. Lee (Schaeffer). (Jour. N. Y. Ent. Soc. vol. 20, p. 74).

Bembidium postfasciatum Ham. Little Falls, VI, 6, by washing banks. (A. S. Nicolay).

Sphaeridium bipustulatum Fabr. Upper Montclair (Nicolay), Hackensack Meadows (Wintersteiner). (Jour. N. Y. Ent. Soc. vol. 20, p. 68).

Atheta castanoptera Man. Little Falls (Nicolay).

Stilicus rudis Lec. Lakewood, April 5. Found while sifting leaves around lake. (A. S. Nicolay).

Cathartus longulus Blatch. Upper Montclair, May 29, under stone. (Nicolay).

Hister fungicola Schaeffer. Jamesburg. (Brook. Bull. vol. 8, p. 27).

Atomaria laetula Lec. of 1909 list should be replaced by **A. distincta** Casey. (Schaeffer).

Dermestes pulcher. South Amboy (Schott). (Jour. N. Y. Ent. Soc. vol. 24, p. 309).

Hetaerius blanchardi Lec. Upper Montclair, May 29, a pair in an ant's nest under a stone. (A. S. Nicolay).

Microrhagus audax Horn. Ft. Lee, July 26 (Schaeffer). (Jour. N. Y. Ent. Soc. vol. 24, p. 167).

Microrhagus imperfectus Lec. Ft. Lee (Schaeffer). (Jour. N. Y. Ent. Soc. vol. 24, p. 167).

Cardiophorus erythropus Er. At Highlands (Schaeffer). (Jour. N. Y. Ent. Soc. vol. 24, p. 167).

Elater pedalis should replace **E. luctuosus** of 1909 list (Schaeffer). (Jour. N. Y. Ent. Soc. vol. 24, p. 167).

Melanotus opacicollis Lec. Lakehurst, August (Schaeffer). (Jour. N. Y. Ent. Soc. vol. 24, p. 167).

Corymbites atropurpureus Melsch. Paterson, May 3 (Doll). (Jour. N. Y. Ent. Soc. vol. 24, p. 167).

Corymbites copei Horn. Lakehurst (Schaeffer). (Jour. N. Y. Ent. Soc. vol. 24, p. 167).

Throscus carinicollis Schaeffer. New Jersey (Bull. Brook. Ent. Soc. vol. 11, p. 63).

Melyrodes cribrata Lec. Ft. Lee, May 23 (Woodruff & Davis) on blackberry blossoms. (Jour. N. Y. Ent. Soc. vol. 24, p. 154).

Anthocomus erichsoni Lec. Lakehurst, July 9 (Woodruff & Davis). (Jour. N. Y. Ent. Soc. vol. 24, p. 154).

Attalus melanopterus Er. Lakehurst, June 17 (Woodruff & Davis). (Jour. N. Y. Ent. Soc. vol. 24, p. 154).

Diplotaxis tristis Kirby. Palisades, May 6 (A. S. Nicolay).

Mordellistena smithii Drury. Jamesburg, July 3 (W. T. Davis).

Corphyra labiata Say. Passaic, common in grass (A. S. Nicolay).

Rhinomacer pallipennis Blatch. New Jersey (Leng). (Rhyn. of N. E. A. by Blatchley & Leng, p. 51).

Auletes albovestita Blatch. Orange Mountains, Anglesea, Brigantine Beach. April to August on bayberry (*Myrica cerifera* L.), also on foliage of leather leaf (*Chamaedaphne calyculata* L.). (Rhyn. of N. E. Amer.). This species replaces **cassandrae** Lec., of 1909 list.

Cholus cattleyae Champ. In an orchid house at Secaucus feeding on and breeding in the pseudo-bulbs of *Cattleya gigas.* Introduced from Tropical America. (H. B. Weiss).

Cholus forbesii Pasc. Found with the above species. (H. B. Weiss).

Anthonomus atomarius Blatch. Ocean County, swept from oak shrubs (Leng). (Rhyn. of N. E. Amer. p. 290).

Anthonomus likensis Blatch. Orange, June, by beating honey locust (Leng.). (Rhyn. of N. E. Amer. p. 30).

Thysanocnemis balaninoides Schaeffer. New Jersey. (Rhyn. of N. E. Amer. p. 242).

Thysanocnemis bischoffi Blatch. Bloomsbury (Bischoff). (Rhyn. N. E. Amer. p. 241).

Tychius picirostris Fab. Palisades, May 23; Upper Montclair, May 29 (A. S. Nicolay).

Ceutorhynchus neglectus Blatch. Chester, Hemlock Falls (Rhyn. N. E. Amer. p. 447). This species replaces **pusio** Mann of 1909 list.

Diorymellus laevimargo Champ. In orchid houses in New Jersey. Beetles feed on leaves and flowers of *Cattleya* and *Dendrobium* spp. (Weiss).

Acypotheus orchivora Blackb. In orchid houses in New Jersey, breeding in pseudo-bulbs of *Dendrobium* spp. and feeding on various parts of the plants. (H. B. Weiss).

Tricrania sanguinipennis Say. Lahaway, April 14, 1916. (R. P. Dow).

Order LEPIDOPTERA.

Hesperia montivagus Reak. August, on clover, Passaic Park, 1899 (rare). (M. H. Mead).

Eutolype bombyciformis Sm. Union County, April (F. Lemmer).

Anytus teltowa Sm. Elizabeth, September 2, September 20; Lakehurst, September 27; Vineland, August 29. (Psyche, 1910).

Arzama (Bellura) brehmei Br. and McD. Cliffwood, May 15. (H. H. Brehme).

Nannia refusata Wlk. Hopatcong, July 20 (F. Lemmer).

Alcis sulphuraria Pack. Hopatcong, July 20 (F. Lemmer).

Brephos infans Moesch. Hemlock Falls, April (Watson and Comstock); Jamesburg, April 23 (Watson). Larva on white birch. (Jour. N. Y. Ent. Soc. vol. 20, p. 218).

Nymphula obscuralis Grt. Passaic Park, July 29, August 15, September 1 (M. H. Mead).

Achroia grisella Fabr. The lesser wax-moth. New Egypt and other parts of the State. Not numerous. (E. G. Carr).

Tortrix georgiella Walk. Whitesbog, June 10, 1915. Bred from larva on blueberry, *Vaccinium corymbosum.* (H. B. Scammell).

Holocera elyella Dietz. Essex County (Kearfoot). (T. A. Ent. Soc. vol. 36, p. 50).

Phuphena u-album Guen. Lakewood, October 1, 1914. Bred from pupa taken from soil of cranberry bog. (H. K. Plank).

Ectoedemia populella Busck. West Norwood, August 15, 1916 (H. B. Weiss). Gall on petiole at base of leaf of *Populus tremuloides.*

Order HYMENOPTERA.

Diprion simile Hartig. Rutherford, South Orange, Elizabeth, July 22. Larvae on pine (Dickerson & Weiss). An European species which has become established in New Jersey.

Janus abbreviatus Say. Bound Brook, Rutherford, Irvington, Elizabeth, Secaucus, South Orange, Springfield. Larvae in poplar and willow shoots. (Dickerson and Weiss).

Andricus brevicornis Beut. Lakehurst. (T. A. Ent. Soc. vol. 39, p. 245).

Meteorus trachynotus Vier. Whitesbog, August 2. Parasitic on *Ancylis comptana* Froehl. (H. B. Scammell).

Cremastus minor Cush. Whitesbog, August, 1915. Bred from *Rhopobota vacciniana* Pack. (H. B. Scammell).

Cremastus forbesii Weed. Pemberton, May, 1915. Bred from *Gelechia trialbamaculella* Cham.; Whitesbog, August, 1915. Bred from *Rhopobota vacciniana* Pack. (H. B. Scammell).

Sesioplex validus Cress. Pemberton, August, 1915. Bred from *Hyphantria cunea* Dru. (H. B. Scammell).

Sympiesis ancylae Girault. Whitesbog, July, 1916. (H. B. Scammell).

Eulophus magnisulcatus Girault. Jamesburg, reared from a cherry "*Coleophor.*" (Ent. News, vol. 27, p. 404).

Arthrolytus aeneoviridis Girault. Whitesbog, July, 1916. (H. B. Scammell).

Monodontomerus dentipes Boh. Bred from cocoons of *Diprion simile*. (Weiss.)

Coelopisthia rotundiventris Gir. Bred from pupae of *Plagiodera versicolora*. Irvington. (E. L. Dickerson).

Pleurotropis tarsalis Ash. Bred from pupa of *Plagiodera versicolora*. Irvington. (E. L. Dickerson).

Lasius murphyi Forel. Female at Chester, August 2. (E. L. Dickerson).

Vespa austriaca Pank. Ft. Lee, July 16 (Bequaert); Staten Island, July 16. (Hine).

Halictus floridanus caesareus Ckll. Ocean Grove, July 12. (Bull. Brook. Ent. Soc. vol. 11, p. 11).

Halictus oceanicus Ckll. Ocean Grove, July 12. (Bull. Brook. Ent. Soc. vol. 11, p. 11).

Bombus ternarius Say. Lake Marcia (High Point). (F. E. Lutz).

Bombus terricola Kirby. Ramsey. (F. E. Lutz).

Order DIPTERA.

Culex brehmei Knab. Laurence Harbor, April 30, May 17. (H. H. Brehme). (Proc. Biol. Soc. Wash. vol. 29, p. 161).

Lestodiplosis platanifolia. Larvae on under sides of plane tree leaves. Rutherford, Elizabeth, Trenton, Riverton, August 15. (E. L. D. and H. B. W.).

Parallelodiplosis cattleyae Moll. Madison, Secaucus, in greenhouses where orchids are grown. Larva makes gall near tip of root. (H. B. Weiss).

Dasyneura communis Felt. Ridgewood, August 13, galls on ribs of leaves of *Acer rubrum* and *A. saccharinum*. (E. L. Dickerson).

Simulium jenningsi Malloch. Lahaway, May 30. (R. P. Dow).

Promachus rufipes Fabr. Cedar Springs (Hebard), August 26. (Ent. News, vol. 27, p. 381).

Hydrophorus intentus Ald. Atlantic City, May 6. (C. W. Johnson). (Psyche, vol. 18, p. 51).

Zodion intermedium Banks. Clementon, May, July. (C. W. Greene). (Annals E. Soc. Amer. vol. 9, p. 193).

Neopales tortricis Coq. Parasitic on *Peronea minuta* Rob. Browns Mills, August, 1914. (H. B. Scammell and H. K. Plank).

Sarcophaga pachyprocta Parker. New Jersey. (Jour. N. Y. Ent. Soc. vol. 24, p. 171).

Chrysomyia concolor Malloch. Lahaway, May 30. (R. P. Dow).

Mosillus tibialis Cress. Wildwood, July 18, 1908. (E. T. Cresson, Jr.). (Ent. News, vol. 27, p. 149).

Drosophila affinis Sturt. New Jersey. (Ann. Ent. Soc. Amer. vol. 9, p. 334).

Drosophila putrida Sturt. New Jersey. (Ann. Ent. Soc. Amer. vol. 9, p. 339).

Drosophila dimidiata Loew. Alpine, July 25; Riverton, September 8. (E. L. Dickerson).

Phytomyza affinis Fall. Springfield, Orange, Nutley, Rutherford, Elizabeth, Riverton, June. Larva mines leaves of clematis. (H. B. Weiss).

Phytomyza ilicicola Loew. Pemberton. Mined leaves of inkberry collected February 23 and adults issued in late April and May. (H. B. Scammell).

Phytomyza aquilegiae Hardy. Rutherford, Springfield, Riverton, Elizabeth, June to September. Larva mines leaves of columbine. (H. B. Weiss).

Aulacigaster rufitarsis Macq. Morristown, June 17. (E. L. Dickerson).

Studies in the Tenebrionid Tribe Eleodiini, No. 2 (Coleop.).*

By F. E. Blaisdell, Sr., San Francisco, California.

The following descriptions of new species and races have been in manuscript for a number of years. Nearly all of them have been distributed under the manuscript names, and it now becomes very imperative that they be published without delay.

Eleodes manni n. sp.

Elongate oblong-oval to ovate (some ♀♀), subasperate and moderately convex, surface feebly shining.

Head twice as wide as long, scarcely convex, feebly impressed just within the prominent frontal margins; frontal suture more or less evident as a glabrous line, sometimes impressed; surface rather coarsely and more or less irregularly punctate, punctures denser laterally and on the epistoma, vertex more finely punctured; antennae long, reaching slightly beyond the pronotal base, outer four joints moderately compressed and feebly dilated, third joint quite equal in length to the fourth and fifth combined, fourth, fifth, sixth and seventh joints subequal in length and obconical, eighth obconico-triangular, ninth and tenth suborbicular in outline, eleventh obovate and obliquely truncate at tip.

*Studies No. 1 was published in the News for February, 1910, vol. xxi, pp. 60-67.

Pronotum widest at the middle, about one-fourth wider than long, about twice as wide as the head in the female, and less than twice as wide in the male; disk very moderately and evenly convex, somewhat densely and irregularly punctate, punctures rather coarse, somewhat denser laterally and not noticeably granulate nor with the surface depressed, not declivous at the angles; apex very feebly emarginate in circular arc, very finely to sub-obsoletely margined; sides broadly, evenly and moderately arcuate to the basal twelfth, there briefly sinuate with the sides parallel to the basal angles, margin entire and finely beaded; base quite truncate and distinctly margined, slightly wider than the apex; apical angles not in the least prominent and very feebly rounded; basal angles small and rectangular.

Propleurae very sparsely muricato-granulate and obsoletely rugulose.

Elytra oval, widest at the middle; base truncate and not in the least adapted to the pronotal base, equal in width to the same; humeri obsolete; sides evenly arcuate, apex somewhat narrowed and rather broadly rounded; disk feebly convex on the dorsum, rather broadly and quite evenly rounded laterally, obliquely declivous posteriorly; surface rather closely and moderately coarsely punctate, punctures somewhat corroded and scarcely asperate centrally along the suture, there subserially arranged, the interstitial punctures more distantly spaced than the closely-placed strial punctures; laterally and apically the punctures are more confused and distinctly muricate.

Epipleurae moderately narrow, gradually narrowing from base to apex, superior margin very slightly curving upward at the base; surface dull, concave in basal one-half and sparsely subasperately punctate.

Sterna finely and densely punctate, punctures setigerous and the surface not noticeably rugulose.

Parapleurae rather coarsely punctate.

Abdomen horizontal, somewhat shining, moderately finely punctate and obsoletely rugulose.

Legs moderate in length, not stout. Profemora mutic; tibial spurs similar and the tarsi dissimilar in the sexes. Plantar spinules ferruginous.

♂. Elongate, narrow, three times as long as wide. Antennae extending about three joints beyond the pronotal base. Elytra as a rule scarcely wider than the pronotum, moderately convex. First two abdominal segments flattened at the middle, the intercoxal process more or less concave. First two joints of the protarsi not noticeably thickened beneath, but clothed with large pads of yellow silken pubescence; surfaces of the pads flat and subpatellate; the marginal and apicomarginal spinules rather long, silky, the latter longer and acute; plantar grooves distinct on the third and fourth joints. First two joints of the mesotarsi with silken pubescence on the apical half of

each, plantar grooves nearly obliterated, especially on the first joint.

♂. Oval to ovate, more robust, about twice as long as wide. Antennae extending about one joint beyond the pronotal base, the latter one-twelfth of its width wider than the apex. Abdomen rather strongly convex. First joint of the protarsi slightly thicker beneath than the second, plantar grooves entire.

Measurements.—Males: Length 15.0-15.2 mm.; width 5.0-6.5 mm. Females: Length 13.5-16.0 mm.; width 6.8-7.0 mm.

Habitat.—Washington (Wawawai, March 20th, April 24th and May 1st, 1909; Ellensburg, March 13th, 1909; Almota, May 17th).

Manni belongs to the subgenus *Blapylis*.

Types (♂ and ♀) in my own collection. Paratypes in Mr. Wm. Mann's collection, to whom the species is dedicated.

Eleodes variolosa n. var. (A new race of *manni*.)

Oblong, elongate, more or less shining, subglabrous. Elytra very coarsely punctate on the disk, the punctures coalescing transversely; laterally and on the apex muricato-rugose, the small muricate tubercles coalescing transversely; intervals somewhat convex; humeri obtuse to obsolete.

Head coarsely, sparsely and irregularly punctate, the punctures crowded laterally and on the epistoma, very feebly convex, impressed laterally and along the pronotal suture. Antennae reaching a little beyond the pronotal base, moderately stout, slightly compressed in the outer four joints and not dilated, third joint a little longer than the fourth and fifth taken together; joints 4-7 inclusive subequal in length and thickness, scarcely obconical, subcylindrical; eighth triangulo-obconical, ninth subtriangular, tenth and eleventh subtrapezoidal, about as long as wide, the latter truncately obovate.

Pronotum widest at the middle and wider than long; disk moderately convex coarsely, irregularly and rather densely punctate, more densely and subgranulately so along the margins at the sides, punctures subequal in size, intervals flat and forming small impunctate areas here and there; apex very feebly emarginate and obsoletely margined; sides evenly arcuate, feebly and not suddenly sinuate in basal seventh, scarcely parallel before the angles; base truncate and finely margined; apical angles obtuse and not at all prominent; basal angles subrectangular and not in the least prominent.

Propleurae opaque, sparsely and very irregularly punctato-granulate, subrugulose about the acetabula.

Elytra oblong-oval to ovate, widest at the middle, base wider than the contiguous pronotal base; humeri obtuse to obsolete; sides evenly arcuate from base to apex, the latter broadly rounded; disk moderately

convex and broadly arcuately rounded laterally, arcuately declivous posteriorly; surface rather coarsely and not densely sculptured, centrally the punctures are coarse, shallow and somewhat eroded, tending to coalesce transversely, laterally and apically muricato-granulate, the rather large granules coalescing transversely so as to appear rugose.

Epipleurae opaque, finely, sparsely and subasperately punctulate, gradually narrowing from base to apex; superior margin scarcely sinuate beneath the humeri.

Sterna and *parapleurae* finely and not densely punctate nor asperate.

Abdomen rather finely and sparsely punctate, more coarsely and rugosely so on the first segment, fourth segment with comparatively few punctures.

Legs rather stout, moderate in length. Profemora mutic. Tarsi dissimilar in the sexes.

♂. Somewhat narrow. Elytra oblong; abdomen less convex, somewhat flattened on the first two segments, and feebly oblique to the sterna.

Protarsi with a blunt tuft of golden pubescence on the first joint at apex beneath; mesotarsi without tufts of pubescence.

♀. Somewhat stout. Elytra less oblong and more oval. Abdomen moderately convex and horizontal, i. e., on the same plane with the sterna. First joint of the protarsi thickened beneath.

Measurements. Male.—Length, 12.0 mm.; width 5.0 mm. Female.—Length, 11.5 mm.; width, 6.0 mm.

Habitat.—Washington (Wenatchee, May 8th; Ellensburg, March 13th) collected by Wm. Mann. Number of specimens studied, 3 (2 ♂ ♂, 1 ♀).

Types (♂ and ♀) in my own collection. *Paratype* (♂) in Mr. Mann's collection.

Eleodes adulterina n. var. (A race of *cordata* Esch.)

Syn. *forma intermedia.* See Bull. 63, U. S. Nat. Mus., p. 381.)

The name *intermedia* is preoccupied. This race of *cordata* Esch. was briefly defined as *E. cordata forma intermedia* in the above monograph of the Eleodiini as follows: "Sculpturing more strongly muricato-tuberculate, with the intervals between the punctures less convex and consequently less reguose, approaching *pimelioides* Mann." On the central area of the elytral disk along the suture the punctures become less muricate and simpler.

A series of 209 specimens collected by Mr. F. W. Nunen-

macher, in Eldorado, Plumas, Del Norte, Humboldt, Placer, Monterey, Shasta and Lake Counties, California, demonstrates very clearly that *adulterina* is the prevailing race of *cordata*. The specimens collected in Del Norte County are on the average smaller than those collected elsewhere, otherwise they are true *adulterina*. The above series is augmented by 156 specimens taken in Tuolumne and Mariposa Counties.

Eleodes hybrida n. var. (A race of *cordata* Esch.)

Prothorax as in *cordata*, except that the pronotal intervals are flat and more or less alutaceous. The punctures are rather abruptly defined, more or less coalescent and irregularly placed, leaving small and impunctate areas on the central part of the disk. The moderately deep punctures give the intervals the appearance of being raised, although not in the least rugose.

Measurements. Males—Length, 12.5-13.0 mm.; width 5.5 mm. Female—Length, 12.5-13.0 mm.; width, 6.0-6.5 mm.

Types in my own collection. Type locality, Plumas County.

Habitat.—Plumas and Lake Counties. F. W. Nunenmacher, collector. Number of specimens studied, 55.

In *adulterina* the prothoracic intervals are rugose as in *cordata* and the punctures finer. The first two joints of the protarsi at tips beneath, bear moderate tufts of piceo-flavate pubescence, and the first joint of the mesotarsi has a small transverse submarginal tuft at tip (♂).

Eleodes trita n. var. (A race of *parvicollis* Esch.)

Opaque, sculpturing eroded, oblong-ovate. Thorax somewhat transverse. Elytra depressed, humeri prominent and obtusely rounded.

Head and antennae as in *producta* Mann. *Pronotum* less transverse and less arcuate behind the middle than in *producta;* disk moderately convex, more or less slightly impressed laterally, rather coarsely and somewhat densely punctate, punctures shallow and eroded, denser and finely granulate along the lateral margin, the summits of the granules bright and shining; apex, sides, base and angles as in *producta. Propleurae* sparsely granulato-punctate and more or less rugulose.

Elytra about twice as long as wide, less elongate than in *producta*; base truncate, distinctly wider than the base of the pronotum; sides more or less arcuate and subparallel, becoming arcuately and somewhat convergent in apical third, apex rather broadly rounded; disk distinctly flattened at base, thence more or less evenly convex, rather obliquely and somewhat rapidly declivous posteriorly, arcuately rounded

at the sides; surface scarcely densely punctate, punctures rather coarse and eroded, irregular but exhibiting a feeble lineate arrangement, subequal in size throughout, about the humeri and along the arcuately declivous sides granulate, granules distinct, bright and shining.

Epipleurae obsoletely and very sparsely punctate.

Sterna.—Prosternum densely punctate, more or less longitudinally grooved between the coxae, feebly mucronate at tip. Meso- and metasterna densely punctate.

Abdomen densely and not very finely punctate on segments 1 and 2, third and fourth less so at middle and along the base, fifth more or less impunctate; glabrous and shining at middle to base.

Legs less stout than in *producta.*

♂. Slightly more oblong, scarcely more depressed than the female. Abdomen slightly flattened at middle of the first two segments and feebly oblique. First two joints of the protarsi moderately thickened at tip beneath and there clothed with rather long flavate pubescence; tuft of the first joint larger than that of the second, both obliterating the plantar groove; third joint without evidence of increased pubescence, spinose on the margins of the groove, the latter smooth and shining. First joint of the mesotarsi also has a small tuft at tip.

♀. More or less oblong-ovate, somewhat broader. Abdomen more convex at base.

Measurements. Males.—Length, 11.0-16.0 mm.; width 5.0-6.4 mm. Females—Length, 12.0-13.0 mm.; width, 5.5-6.0 mm.

Habitat.—Oregon (Josephine County, June 8th). California (Humboldt County, Del Norte County).

Described from a series of 23 specimens.

Types in my own collection. Collected by Mr. F. W. Nunenmacher, who possesses paratypes.

Type locality.—Del Norte County, California.

Trita may have been distributed as *forma opaca.* Compared with a newly collected series of 42 specimens of *producta* Mann., and 280 specimens of *constricta* LeC., all collected by Mr. Nunenmacher on the same trip.

Eleodes papillosa n. sp.

Syn. *granulata forma tuberculata.*

During the summer of 1913, Dr. E. C. Van Dyke and Mr. L. R. Reynolds collected typical *Eleodes granulata* LeC. at Carville, Trinity County, California. When the monograph of the Eleodiini (Bull. 63, U. S. Nat. Mus.) was written no specimens of typical *granulata* had been seen, and the author was

doubtful as to the status of the present species, which was defined as follows: "Thorax as in *aspera* LeC., elytra with the humeri subacute; *disk sculptured with distinct tubercles,* which usually show a serial arrangement, alternate series larger and not at all rugose."

Habitat.—California (Siskiyou County, collections U. S. National Museum).

Papillosa is larger and more robust than *granulata,* and usually of an intense black and feebly shining. The pronotal punctuation is like that of *Upis ceramboides,* only that the punctures are distinctly separated and not coalescent. The elytral tuberculation is almost like that observed in *granosa.* (See p. 131, Bull. 63, U. S. Nat. Mus.)

Key to the Nearctic Species of Gargaphia with the Description of a New Species (Hem., Heter.)

By Carl J. Drake, Ohio State University, Columbus, Ohio.

The genus *Gargaphia* Stål is represented by five described Nearctic species and a new one is added herein. The genus can readily be separated from the other genera of the Tingidae by the transverse, sinuous carina which interrupts the rostral sulcus between the meso- and metasternum.

Key to the Nearctic Species of Gargaphia.

1—Elytra broad, costal area with four or more rows of areolae at its widest part 2

Elytra narrower, costal area with not more than three rows of areolae at its widest part 4

2—Lateral membraneous pronotal margins widely expanded, with five or more rows of areolae at its widest part; first segment of the antennae blackish ..... *G. solani* Heid.

Lateral membraneous pronotal margins narrower, with not more than four rows of areolae at its widest part; first segment of the antennae testaceous 3

3—Size small (less than 3.5 mm.); membraneous pronotal margins angularly expanded about the middle ..... *G. angulata* Heid.

Size larger (more than 4 mm.); membraneous pronotal margins rounded ..... *G. tiliae* Walsh.

4—Costal area of the elytra narrow, with not more than two rows of areolae at its widest part; membraneous pronotal margins very narrow, strongly reflected, and forming an acute angle with the thorax ..... *G. opacula* Uhler.

Costal area of the elytra with three rows of areolae at its widest part; membraneous pronotal margins broader, not so strongly reflected and forming an obtuse angle with the thorax.....5

5—Costal area of the elytra with two complete and a partial series of areolae; nervures of elytra and membraneous pronotal margins not of a uniform color, the areolae more or less iridescent, *G. iridescens* Champ.

Costal area of the elytra with three complete series of areolae; nervures of the elytra and membraneous pronotal margins concolorous, the areolae hyaline.....*G. albescens* n. sp.

Gargaphia albescens spec. nov.

Head armed with five rather short spines. Antennae slender, moderately long, beset with a few short hairs; first segment rather short, about twice the length of the second; fourth segment longer than the first and second conjoined.

Lateral membraneous pronotal margins moderately broad, angularly dilated about the middle, composed of two quite regular rows of areolae and in some specimens with two or three extra cells at the angle. Hood moderately large. Pronotum punctate, tricarinate; carinae moderately hairy, composed of a single series of areolae. Rostral sulcus deep, the rostrum almost reaching the transverse, sinuous carina. Hood, membraneous pronotal margins, and elytra beset with a few short, very fine hairs.

Elytra moderately broad, reaching considerably beyond the apex of the abdomen; costal area composed of three quite regular series of areolae. Wings a little longer than the abdomen.

Claspers in the male large and strongly curved.

Length (♂ and ♀), 3 mm.; width, 1.3 mm.

Color. General color white. Head, thorax and abdomen black (in one specimen the thorax and abdomen beneath are brownish-black). Antennae: first segment black, second and fourth (except base) segments blackish, third segment and base of fourth dirty white. Legs dirty white, the tips of tarsi and nails embrowned. Nervures of hood, membraneous pronotal margins, posterior triangular process of pronotum, and elytra white; areolae hyaline. Nervures of carinae white, except a few of the transverse nervures embrowned. Wings iridescent. Bucculae, rostral sulcus, and transverse carina broadly margined with white. Claspers in the male embrowned.

Four specimens, taken at Sacramento, California, by Mr. D. J. Condit. *Type* in my collection: *paratype* in the collection of Prof. J. G. Sanders. This species can readily be separated from allied forms by the characters given in the key. It is most closely related to *angulata* and *iridescens*.

ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., MAY, 1917.

Entomology as a National Defense.

Dr. L. O. Howard, Chief of the Bureau of Entomology, United States Department of Agriculture, writes:

It is unnecessary to call attention to the important work which the entomologists of the country can do in the present crisis in the way of increasing crop production by the control of injurious insects. The Bureau of Entomology is organizing its forces to bring before the country at large essential information of this character through brief publications and through the activities of men at various field stations. While no part of the field should be neglected, it is felt that special attention should be given to insect outbreaks involving staple crops, and to the preservation of stored grain, forage, etc. Probably in some instances it will be feasible to reduce infestation or spread by prompt measures. For this reason the entomological service of the United States as a whole should be on the lookout for unusual insect conditions, and where concerted action is essential, such co-operation should be arranged at the first possible moment.

The Bureau of Entomology wishes greatly to increase its reporting service on insect pests. We will have the co-operation of the crop reporters and farm demonstrators throughout the country and would like to have also the co-operation of all State and Station Entomologists. This service will be conducted with headquarters at Washington and it is hoped that all those assisting will keep the central office in constant touch with the status of insect pests in their vicinity. With these data in hand the central office will be able to tabulate and map the occurrence of all injurious pests and to indicate to the men in the field the sections which are threatened with insect damage and the means for combating same. With this information it will be possible to conduct a vigorous campaign against threatening pests.

The Bureau stands ready to assist State and Station Entomologists whenever it is possible to do so.

Dr. E. P. Felt, State Entomologist of New York and Editor of the *Journal of Economic Entomology*, writes:

Our country has entered a gigantic struggle in which material assets of many kinds play a most important part. There

is urgent need for the conservation and development of all resources—life, health, food—to designate a few having a close relation to applied entomology. An army or navy can accomplish little without the foregoing essentials. There are many openings for the economic entomologist to demonstrate the utility of his calling. The urgent need of better camp sanitation, so far as insects are concerned, warrants an entomological staff attached to every large camp and hospital center and associated with the medical or sanitary corps in handling insect problems, particularly flies and other disease carriers, though body parasites and animal pests should not be ignored. These men should have a rank which would give weight to their recommendations, resources which would permit intensive studies of the entire problem if necessary, and facilities for the practical application of results to field and camp conditions. The work in the various localities should be co-ordinated and directed by a supervising entomologist in order to insure the greatest efficiency.

It is very far from my idea to criticize directly or indirectly the administration by army officials of sanitary matters in relation to insect control in camps, and yet it seems to me there is a great opportunity for the practical entomologists to render an invaluable service to the country, through co-operation and the placing at the disposal of the sanitarians, preferably working with them rather than simply advising, of knowledge which we have gained through the experience not only with flies and other insects occurring, or likely to occur, in camps, but also that gained from a study of other forms of insect life and which may be of service in solving problems of pressing importance.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

Mr. E. B. Williamson's Collecting Trip in Colombia.

From an article in the Bluffton, Indiana, *Daily News*, of March 15, 1917, we learn that Mr. E. B. Williamson returned to his home in that town on March 14. He was accompanied by his cousin Mr. Jesse Williamson. He left Bluffton on November 25, 1916, was joined by his cousin at Colon, Panama, December 5 and, after two days in the Canal Zone, touched at Cartagena, Colombia, December 8, at Porto Colombia December 9, and made Santa Marta on December 12. In this region they collected December 13-January 13. Leaving Baranquilla December 18, they proceeded up the Magdalena River 600 miles as far as the lower Magdalena is navigable. They then went by train to Mariquita, only 100 miles from Bogota, their nearest approach to that city. Collecting was done near the river on the up voyage, and

on the descent at Cisneros and Cristalina, the latter being an especially favorable locality. Leaving Santa Marta February 28, they returned to Bluffton via Cristobal (C. Z.), Bocas del Toro, Havana and New Orleans. They brought back 8560 specimens of dragonflies and about 500 miscellaneous insects.

The Destruction of the House Fly.

The Merchants' Association of New York, through its Committee on Pollution and Sewerage, has issued a circular in regard to the common house fly, in the belief that the health and welfare of the community is of vital interest to all, and that any suggestion for the eradication of this dangerous and annoying household pest will be appreciated by every one. It also suggests that the attention of the pastors of churches be called to the desirability of teaching their people the iniquities of the house fly. "Furthermore, school trustees and teachers would find it instructive and interesting to emphasize the importance of this matter in talks to the pupils on the subject. There are a number of authorities who believe that the germ or virus of infantile paralysis is disseminated by the fly and all efforts should be directed to prevent a recurrence of last year's dread experience by this agency." The association has its offices at 233 Broadway, New York.

Notice to the Zoological Profession of a Possible Suspension of the International Rules of Zoological Nomenclature in the Cases of Musca Linnaeus, 1758, and Calliphora Desvoidy, 1830. (Dipt.).

In accordance with the Rules of the International Zoological Congress, the attention of the zoological profession is invited to the fact that Dr. L. O. Howard, W. Dwight Pierce, and 21 other professional zoologists have requested the International Commission on Zoological Nomenclature to exercise its Plenary Power in the case of the Linnaean genus *Musca* 1758, and, under suspension of the Rules, to declare *M. domestica* as type of this genus, also, under suspension of the Rules, to validate *Calliphora* Desvoidy, 1830, with *C. vomitoria* as type.

The request is based on the grounds of practical utility, and an almost unbroken history of consistent usage since 1758 in the case of *Musca,* and since 1830 in the case of *Calliphora.* It is claimed that a strict application of the Rules will produce greater confusion than uniformity.

According to the premises at present before the Commission, if the Rules are strictly applied, the generic name of *Musca* would take either *M. caesar* or *M. vomitoria* as type, and the species *M. domestica* would be cited either in *Conostoma* 1801 [?] (type *Ascaris conostoma* = larva of *M. domestica*) or in *Promusca* 1915 (type *M. domestica*), thus resulting in a very regrettable change in the nomenclature of the species in question as almost universally used in entomological, zoological, medical, epidemiological and veterinary literature.

The Secretary of the Commission invites any person interested in these cases of nomenclature to communicate his opinion on the subject as soon as possible, and not later than May 1, 1918, when the subject will be submitted to the Commission for vote.—C. W. Stiles, Secretary to Commission, 25th & E. Streets, N. W., Washington, D. C.

Pupal Differences in Megathymus (Lep.).

Mr. J. G. Bonniwell, who has collected the pupae of *Megathymus yuccae* and *cofaqui,* has recently sent me specimens of the pupal tubes of both species and also the empty pupal shells. There is a marked difference in the silk tubes from which the imagos emerged, both in size and in color. When cut open and measured across, that of *yuccae* is 45 mm., and that of *cofaqui* 34 mm. The outer sides of these pouches, tubes or nests are covered by what appears to be the plant fibre chewed up by the larvae and is rather fine and disintegrated.

In the case of *M. yuccae* it is of dark gray color and in *M. cofaqui* it is yellowish brown. In these two specimens the difference in color is marked. The two pupae he sent me also differ in size, that of *yuccae* being 45 mm. long, that of *cofaqui* 40 mm. long, and the former is more robust.

Dr. C. V. Riley in his account of the pupa of *yuccae* describes it as ending in a slightly decurving flap. In the two specimens examined this is approximately twice as wide in *yuccae* as in *cofaqui.* There are probably differential pupal characters in addition, but from only one specimen of each I could not be sure whether they were differential or only individual, or possibly sexual.

Some time ago Dr. D. M. Castle gave me a *yucca* plant that had a borer in it and I was able to rear it to the adult stage and it proved to be *Megathymus yuccae.* The silken pupal tube extended five and one half inches above the ground and the upper end was covered with a certain amount of what appeared to be frass. The whole plant, including the leaves, was fourteen inches high. The type of *cofaqui* is a female and the male was recently described in the Bull. Am. Mus. Nat. Hist., 1917, XXXVII, 36. We have had both sexes for many years. I described *Megathymus stephensi,* a Californian species, as a variety of *neumoegeni* but I now consider it a distinct species, and I think an examination of the genitalia would prove this to be correct.

The genus is an interesting one and the insects far more plentiful in nature than one would think from finding the imagos, which have always been rare in collections.—Henry Skinner.

Synonymic Notes on North American Lepidoptera.

Thanaos callidus Grinnell.

In our *Contributions* (Vol. III, No. 2, pp. 122-3), we suggested that the male and female types of this species were not conspecific, that the female type, after which seemingly most of the identifications had been made, was probably the same species as *lacustra* Wright, but that the male type, which automatically would hold the name, was probably a form close to *persius.* Since then, through the kindness of Mr. Fordyce Grinnell, we have examined the types of *callidus* as well as the single male type of *pernigra* and find that our surmise was correct;

the male types are a form close to *persius* and probably the California representative in the Higher Sierras of the Eastern species; the so-called female type was really a male and belonged to the *brizo* group, being the same as that later described by Wright as *lacustra*. *Pernigra* is a very dark form apparently worthy of a name, and quite possibly restricted to Mt. Tamalpais and the San Francisco Bay region; a study of the genitalia will be necessary to show whether it is distinct from *callidus* as a species.

Cerapoda oblita Grt. (syn. *deserta* Grinnell).

The species described as *Autographa deserta* by Grinnell in 1912, (Bull. S. Calif. Acad. Sci., p. 79) proves to be synonymous with *Cerapoda oblita* Grt.; through the kindness of Dr. R. Ottolengui, of New York, and Mr. F. Grinnell, one of the types has been placed in the Barnes Collection.

Genus **Animomyia** Dyar (syn. *Graefia* Pears.)

This genus was described and doubtfully placed in the *Liparidae* in 1908, (Proc. Ent. Soc. Wash. X, 53), based on the species *morta* Dyar from San Diego, Calif. In 1910, (Can. Ent. XLII, 330), Pearsall erected the genus *Graefia* in the *Geometridae* for the species *smithi* Pears. from Walters Station, Calif. We have before us one of the co-types of *smithi* Pears., received through the kindness of the authorities of the American Museum of Natural History, New York, and have recently received a specimen of *morta* Dyar from Laguna Beach, Calif. The two genera are synonyms without a doubt, in fact the specimens from San Diego, mentioned by Pearsall at the close of his article as being almost worthy of a varietal name, is really *morta* Dyar, which seems to us specifically distinct from *smithi*; the points mentioned by Pearsall, *viz.* smaller size, more hyaline wings and closeness of t. p. line to discal dot easily separate *morta* from *smithi*. The reference to the *Geometridae* near *Coniodes* seems to us to be correct. The synonymy will, therefore, stand:

Animomyia Dyar.
Graefia Pears.
(1) *morta* Dyar.
(2) *smithi* Pears.

J. McDunnough, Decatur, Illinois.

The Collector's Exchange.

Under this title, Mr. Sidney C. Carpenter, of Hartford, Connecticut, proposes a weekly publication of "Wanted," "For Sale" and "Exchange" notices, "For Sale" and "Exchange" lists, and a classified directory of collectors, specialists and dealers. Those interested may apply to him for a circular giving detailed information.

A Correction. (Col.).

Owing to a mistake in copying the manuscript of the description of *Omus cupreonitens* Blais. & Reyn., the elytra were stated to be one-third longer than wide, which is not the truth. The statement should be corrected to read, (elytra) *about one-half longer than wide.* (Ent. News, Vol. XXVIII, No. 2, p. 50).—FRANK E. BLAISDELL, SR., San Francisco, Calif.

A Correction (Col.).

I note an error in spelling in the manuscript of the first part of my article, appearing in the March number of the NEWS. On page 131, species No. 8. *Trachykele nebulosa* Fall should read "*Trachykele nimbosa* Fall." There is no such species as *T. nebulosa.*—W. J. CHAMBERLIN.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new species are all grouped at the end of each Order of which they treat. Unless mentioned in the title, the number of the new species occurring north of Mexico is given at end of title, within brackets.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

4—The Canadian Entomologist. **5**—Psyche. **8**—The Entomologist's Monthly Magazine, London. **18**—Ottawa Naturalist. **50**—Proceedings of the U. S. National Museum. **68**—Science, New York. **86**—Annales, Societe Entomologique de France, Paris. **87**—Bulletin, Societe Entomologique de France, Paris. **143**—Ohio Journal of Science, Columbus, Ohio. **153**—Bulletin, American Museum of Natural History, New York. **161**—Proceedings, Biological Society of Washington. **179**—Journal of Economic Entomology. **180**—Annals, Entomological Society of America. **184**—Journal of Experimental Zoology, Philadelphia. **272**—Memorias, Real Academia de Ciencias y Artes de Barcelona. **304**—Annals of the Carnegie Museum. **313**—Bulletin of Entomological Research, London. **322**—Journal of Morphology, Philadelphia. **355**—Smithsonian Institution Report, Washington, D. C. **373**—Contributions to the Natural History of the Lepidoptera of North America, by Wm. Barnes & J. H. McDunnough, Decatur, Ill. **394**—Parasitology, Cambridge, England. **438**—Bulletin, Illinois State Laboratory of Natural History, Urbana. **447**—Journal of Agricultural Research, Washington. **531**—Boletin, Direccion de

Estudios Biologicos, Mexico. **540**—The Lepidopterist. Official Bulletin, Boston Entomological Club.

GENERAL SUBJECT. Calvert & Calvert—A year of Costa Rican natural history (New York, The Macmillan Co., 1917), 577 pp.—**Cockerell, T. D. A.**—New tertiary insects, **50,** lii, 373-84. Fossil insects, **180,** x, 1-22. **Criddle, N.**—Precipitation in relation to insect prevalence and distribution, **4,** 1917, 77-80. **Glaser, R. W.**—The growth of insect blood cells in vitro, **5,** xxiv, 1-7. **Goldschmidt, R.**—A further contribution to the theory of sex, **184,** xx, 593-611. **Headlee, T. J.**—Some facts relative to the influence of atmospheric humidity on insect metabolism, **179,** x, 31-38. **Hewitt, C. G.**—Insect behaviour as a factor in applied entomology, **179,** x, 81-94. **McColloch, J. W.**—A method for the study of underground insects, **179,** x, 183-88. **Sjostedt, Y.**—Construction of insect nests, **355,** 1915, 341-7. **Walden, B. H.**—Simple apparatus for insect photography, **179,** x, 25-30. **Walsh, G. B.**—On the rarity and restricted distribution of animal—especially insect—species, **8,** 1917, 57-61 (cont.). **Wilcox, A. M.**—Notes on rearing insects for experimental purposes and life-history work, **5,** xxiv, 7-12. **Winn, A. F.**—The insect collections of Canada, **4,** 1917, 111-12.

PHYSIOLOGY AND EMBRYOLOGY. Carothers, E. E.—The segregation and recombination of homologous chromosomes as found in two genera of Acrididae (Orthoptera), **322,** xxviii, 445-522. **Casteel, D. B.**—Cytoplasmic inclusions in male germ cells of the fowl tick....., **322,** xxviii, 643-84. **Hance, R. T.**—The somatic mitoses of the mosquito, Culex pipiens, **322,** xxviii, 579-92. **Whiting, P. W.**—The chromosomes of the common house mosquito, Culex pipiens, **322,** xxviii, 523-78.

NEUROPTERA, ETC. Bacot & Hindle.—A contribution to the bionomics of Pediculus humanus (vestimenti) and P. capitis, **394,** ix, 228-65. **Nuttall, G. H. F.**—Studies on Pediculus. 1. The copulatory apparatus and....., **394,** ix, 293-324. **Whitehouse, F. C.**—The Odonata of the Red Deer district, Alberta, **4,** 1917, 96-103.

Navas, R. P. L.—Neuropteros nuevos o poco conocidos [1 n. sp.], **272,** xiii, 155-178.

ORTHOPTERA. DuPonte & Vanderleck.—Studies on Coccobacillus acridiorum, and on certain intestinal organisms of locusts, **180,** x, 47-62.

HEMIPTERA. Glaser, R. W.—Anthocyanin in Pterocomma smithiae, **5,** xxiv, 30. **Hungerford, H. B.**—Notes concerning the food supply of some water bugs, **68,** xlv, 336-7. **Maulik, S.**—Solubility of the scale of Lepidosaphes ulmi, **313,** vii, 267-70. **Metcalf, Z. P.**—The wing venation of the Cercopidae, **180,** x, 27-34.

Parshley, H. M.—Notes on No. American Tingidae [4 new], **5,** xxiv, 13-25. **Sanders & DeLong.**—The Cicadellidae of Wisconsin, with descriptions of new species [13 new], **180,** x, 79-97.

LEPIDOPTERA. Ainslie, C. N.—A few notes on the life history of Phalonia spartinana, **4,** 1917, 93-6. **Ainslie, G. G.**—Crambid moths and light, **179,** x, 114-23. **Collins, C. W.**—Methods used in determining wind dispersion of the gipsy moth and some other insects, **179,** x, 170-77. **Dyar, H. G.**—Nomenclature of Catocala varieties, **540,** i, 31-2. **Mabille, P.**—Description d'Hesperides nouveaux, **87,** 1917, 54-60. **Murillo, L.**—Mariposa de Guinea [Eumaeus debra], **531,** i, 637-40. **Saunders, W. E.**—European butterfly found at London, Ont. (Adopea lineola), **18,** xxx, 116,

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Barnes & McDunnough.—Further notes on Philotes battoides and its allies. Remarks on Grossbeck's list of Florida L. New sps. and vars. of Geometridae [many new], **373,** iii, 213-96.

DIPTERA. McColloch, J. W.—Wind as a factor in the dispersion of the hessian fly, **179,** x, 162-70. **Macdonald, A.**—Notes on blood-sucking flies of Grenada, **313,** vii, 259-64. **Macfie, J. W. S.**—Morphological changes observed during the development of the larva of Stegomyia fasciata, **313,** vii, 297-307. **Mote, D. C.**—Observations on the distribution of warble flies in Ohio, **143,** xvii, 169-176. **Richardson, C. H.**—The response of the house-fly to certain foods and their fermentation products, **179,** x, 102-9. **Townsend, C. H. T.**—Second paper on Brazilian Muscoidea collected by H. H. Smith, **153,** xxxvii, 221-33. **Welch, P. S.**—Further study on Hydromyza confluens, **180,** x, 35-46.

Cockerell, T. D. A.—(See under General). **Edwards, F. W.**—Notes on Culicidae, with descriptions of n. sps., **313,** vii, 201-30. **Malloch, J. R.**—A preliminary classification of D., exclusive of Pupipara, based upon larval and pupal characters, with keys to imagines in certain families. Pt. I. [Many new], **438,** xii, 161-407. **Townsend, C. H. T.**—New genera and sps. of American muscoid D. [13 n. g.; 4 n. sps.], **161,** xxx, 43-50. **Williston, S. W.**—Camptopelta, a new genus of Stratiomyidae [1 n. sp.], **180,** x, 23-6.

COLEOPTERA. Bugnion, E.—Les parties buccales de Nacerda melanura, **86,** 1916, 326-36. **Desbordes, H.**—Synopsis de divers groupes d'Histeridae, **86,** 1916, 297-326. **Hess, W. N.**—The chordotonal organs and pleural discs of cerambycid larvae, **180,** x, 63-78. **Lesne, P.**—Notes sur les Philorea, coleopteres Tenebrionides de la fauna des Andes, **87,** 1917, 71-2.

Cockerell, T. D. A.—(See under General). **Wickham, H. F.**—New sps. of fossil beetles from Florissant, Colorado, **50,** lii, 463-72.

HYMENOPTERA. Holland, W. J.—List of the H. collected on

the Isle of Pines by G. A. Link, 1912-13, and contained in the Carnegie Museum, **304,** xi, 291-96. **Urbahns, T. D.**—Tetrastichus bruchophagi, a recently described parasite of Bruchophagus funebris, **447,** viii, 277-82. **Wheeler, W. M.**—The No. American ants described by Asa Fitch, **5,** xxiv, 26-9. **Zappe, M. P.**—Egg-laying habits of Diprion simile, **179,** x, 188-90.

Cockerell, T. D. A.—(See under General). **Girault, A. A.**—Two n. gen. of No. American Entedoninae (Chalcid-flies), **4,** 1917, 110-11. **Howard, L. O.**—A new aphis-feeding Aphelinus, **161,** xxx, 77-8. **Morrison, H.**—Monograph of the nearctic H. of the genus Bracon [many new], **50,** lii, 305-43. **Viereck, H. L.**—Contributions to our knowledge of the bee genus Perdita [1 n. sp.], **153,** xxxvii, 241-42. **Viereck, H. L., et al.**—The H., or wasp-like insects of Connecticut. (Guide to the insects of Connecticut, Part III). (Conn. Geol. & Nat. Hist. Survey, Bul. 22). [many new].

Doings of Societies.

The American Entomological Society.

Meeting of December 11, 1916, in the hall of the Academy of Natural Sciences of Philadelphia; Dr. Henry Skinner, President, in the chair. Nine members and two associates of the Entomological Section of the Academy present. The annual reports were read; 577 additions to the library by gift, exchange, etc., were recorded; new By-Laws had been adopted and copies printed and distributed, and a new agreement with The Academy adopted. The report of the Publication Committee mentioned the completion of Volume XLII of the *Transactions* and the issue of Number 1 of the *Memoirs* of the Society. On motion it was voted that the Society's meetings during 1917 be held on the fourth Thursday of February, April and October, and the second Monday of June and December. The following were elected to serve for the year 1917: *President,* Henry Skinner; *Vice President,* James A. G. Rehn; *Corresponding Secretary,* Morgan Hebard; *Recording Secretary,* R. C. Williams, Jr.; *Treasurer,* E. T. Cresson; *Publication Committee,* J. A. G. Rehn, E. T. Cresson, P. P. Calvert; *Finance Committee,* J. A. G. Rehn, D. M. Castle, Morgan Hebard; *Property Committee,* E. T. Cresson, Jr., Morgan Hebard, Philip Laurent.

Meeting of February 15, 1917, in the same hall. Dr. Henry Skinner, President, in the Chair; five members and four associates of the Entomological section of the Academy present.

A communication from the North Carolina College of Agriculture was read, requesting the appointment of a delegate from the Society

at the inauguration of Wallace Carl Riddick as President. President Skinner reported that he had appointed Prof. Franklin Sherman, Jr., of the Dept. of Agriculture, Raleigh, N. C., to represent the society.

Dr. Skinner called attention to the requirement of the Society that duplicate material be sent in with papers offered for publication describing new species, and stated that Miss Annette F. Braun had sent in 65 species of Nepticulidae, including cotypes and paratypes, with her paper.

Orthoptera. Mr. Rehn exhibited a specimen of *Circotettix splendidus* from Mount Lowe.

The meeting was followed by an interesting informal talk by Dr. Skinner, illustrated by lantern slides using the newly acquired lantern, and describing and illustrating his collecting experiences in Carolina, Cuba, and the Rocky Mountains of Canada and Arizona. This was followed by a talk by Mr. Rehn, who showed slides of the localities visited by him and Mr. Hebard, in Arizona and elsewhere on their recent trips, and related interesting collecting experiences.—R. C. WILLIAMS, JR., *Recording Secretary.*

Newark Entomological Society.

Meetings of February 11 and March 11, 1917, held in the Newark (New Jersey) Public Library, President Buchholz in the chair; average attendance, nine members.

Lepidoptera. At the February meeting Mr. Rummel exhibited a Cynthia cocoon containing two pupae, one of which had hatched, also a series of *Catocala ilia* and the variety *uxor*, which he had collected at Hagerstown, Maryland, July 6, 1916, and *Haploa lecontei* var. *dyari* and var. *militaris* from the same locality. He also exhibited all of the species of *Scopelosoma* recorded in Smith's 1909 list as being present in New Jersey which he had collected during the latter part of October in the Orange Mountains (New Jersey), this being an additional locality. At the March meeting he exhibited a box of inflated larvae of Sphingidae and Noctuidae and commented on the abundance of some species the past summer.

Homoptera. Mr. Lemmer, at the March meeting, exhibited a small form of the Periodical Cicada which he had collected at Lyons Farms (New Jersey), July 14, 1916. Brood VIII is recorded from New Jersey only in Essex County and is due in 1917. His capture might have been an early individual of this brood. Mr. Weiss recorded *Aclerda tokionis* Ckll., from Riverton, New Jersey, on bamboo, May 15, 1916 (identified by Mr. H. Morrison), this being a Japanese scale insect recorded heretofore in the United States only from California.

Hemiptera. Mr. Weiss mentioned at the March meeting his capture of two tropical bugs, *Cardiastethus tropicalis* Champ., and *Solenonotus*

nigromarginatus Champ. (identified by E. H. Gibson), both of the family *Anthocoridae*, at Summit, New Jersey, on orchids from the United States of Colombia.—HARRY B. WEISS, *Secretary*.

Feldman Collecting Social.

Meeting of January 17, 1917, at the home of H. W. Wenzel, 5614 Stewart Street, Philadelphia; nine members present. President H. A. Wenzel in the chair.

The President read his annual address which was ordered to be incorporated in the minutes.

The following officers were re-elected to serve for 1917: *President*, H. A. Wenzel; *Vice President*, Wm. S. Huntington; *Treasurer*, H. W. Wenzel; *Secretary*, Geo. M. Greene, and *Assistant Secretary*, J. W. Green.

Lepidoptera. Mr. Haimbach exhibited a pair of a new form of *Automeris io* Fabr., from Jemez Springs, New Mexico, June 21, 1916, collected by Jno. Woodgate, which he will describe and name later. Mr. Laurent stated that *Samia cecropia* Linn. was more plentiful in Brooklyn, New York, than in Philadelphia, and that they have a different habit. Both this and last winter, while walking around the Flatbush district of Brooklyn, he found that nearly every maple (?) tree had from ten to thirty cocoons attached to the limbs. The strange part was that there were as many cocoons on the branches of the upper half of the tree as on the lower half. In Philadelphia it is seldom that more than three cocoons are found on a tree and these are generally on the lower limbs. Mr. Daecke exhibited a specimen of *Scopelosoma moffatiana* Grt., which he took on the wing, November 11, 1916, at Rockville, Pennsylvania. He said that this species most likely hibernates in the adult state since there are also records of it from very early spring. He also exhibited specimens of *Scoliopteryx libatrix* Linn. collected by Mr. Knull in a limestone cave near Hummelstown, Pennsylvania, January 7, 1917. This beautiful species, which is closely allied to the one mentioned before, is known to hibernate in the adult state. It is very common in Europe, where it is often injurious to willow and poplar.

General. Mr. Haimbach read his translation of a review by Prof. Dr. Karl Eckstein (Eberswalde), in *Illustrierte Zeitschrift für Entomologie*, IV, p. 381, 1899, on the abnormal mating of insects by G. Jakobson, Arbeiten der russischen Ent. Ges. (Laboratory work of the Russian Entomological Society), Vol. 31, 1898 (Russian).

In the above article Jakobson treats of three possibilities of abnormal mating:

I. The mating between males and females of different genera and even families: *Buprestis* x *Elater; Elater* x *Telephorus; Telephorus*

melanurus F. x *Synaptus filiformis* L.; *Strophosomus coryli* F. x *Chrysomela* (*Orina*) *cacaline* Schr.; *Hypera poligoni* L. x *Coccinella bipunctata* L.; *Telephorus melanurus* F. x *Athous niger* L.; *Donacia simplex* F. x *Opoderus coryli* L.; *Coccinella* x *Chrysomela; Ocneria dispar* L. x *Pieris brassicae* L.; *Hibernia marginaria* Bkh. x *Orrhodia vaccinii* L.

II. The mating of two males with one another: *Melolontha vulgaris* x *M. vulgaris; Melolontha vulgaris* x *M. hippocastani, Telephorus melanurus* x *Lampyris noctiluca.* Sadeau differentiates the two cases as follows: *péderastie par nécessité* and *péderastie par goût.*

III. The mating of several males with one female: *Dyctyoptera sanguinea* 5 males x one female; *Tortrix viridana* male and at the same time *Tortrix hepara* male x *Tortrix viridana* female; *Cerocoma* sp. 4 males x 1 female.

In conclusion Jakobson brings out the following two points:

I. It is taking a risk to describe a new species from two specimens taken in copulation as male and female of one species. They may be two males of different species.

II. You cannot unite male and female of a pair taken in copulation as belonging to one species as the male may be one and the female another species.

Adjourned to the annex.

Meeting of February 21, 1917, at the home of Wm. S. Huntington, 1910 North 21st Street, Philadelphia; twelve members and four visitors present. President H. A. Wenzel in the chair.

Lepidoptera. Mr. Daecke exhibited *Pamphila huron* Edw. which he collected at Rockville, Pennsylvania, September 30, 1916. Said that while at Progress, Pennsylvania, on June 9, 1916, he had noticed some dried currants which were infested. He took these home and on June 30 *Eulia triferana* Wlk. emerged. He cannot find record that they attack currants, but they are known to feed on various things, mainly huckleberries.

Coleoptera. Mr. Geo. M. Greene exhibited a specimen of *Geotrupes* (*Cnemotrupes*) *ulkei* Blanchard found dead in woods by Mr. Morgan Hebard at Bald Knob, Bath County, Virginia, August 14, 1916. The specimen is minus the head and of three specimens in the Horn Collection, labelled "N. C. Merkel," two are in the same condition and the third perfect. This species was described in *Psyche* V, pp. 106-110, 1888. Type locality Virginia in fungi. Called attention to an article in *Proc. Ent. Soc. Wash.* IV, p. 497, July, 1901, "The Ant-decapitating Fly," by Theodore Pergande, in which is described *Apocephalus pergandei* Coquillett, a fly which decapitated *Camponotus pennsylvanicus* De Geer and afterwards bred from the head.

Adjourned to the annex.—Geo. M. Greene, *Secretary.*

EXCHANGES.

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted—Hesperiidae from all parts of North America. Will pay cash or exchange Iowa insects. A. W. Lindsey, 112 E. Bloomington St., Iowa City, Ia.

For Exchange—Duplicate Rhopalocera from Japan and Formosa; Desiderata: butterflies of the world. S. Satake, No. 48 Aoyama-minamimachi 5-chome, Akasakaku, Tokyo, Japan.

Any Group or order of insects collected this summer for Buprestidae and Longicorns from N. A. or for exotic Buprestidae. Desire to get in touch with interested parties. Alan Nicolay, 416a Grand Avenue, Brooklyn, N. Y.

WANTED—Papers published since 1894 and containing references to American Coleoptera, by Bernhauer, Grouvelle, Lesne, Leveille, Lewis, Pic, Otto Schwarz, Wasmann or other foreign authors. Will pay cash or give in exchange papers by American authors that I have in duplicate.—C. W. Leng, 33 Murray St., New York City.

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DIPTERA.

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2048.—On Coelophyllum simplex and certain of its allies (Tettigoniidae.) (Ent. News, **28**, 152-161, 1 pl., '17).. .14

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tatricus Mill.
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festivus Fabr.
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etruscus Quens.
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